

The EVALUATION Project

Indicators for Reproductive Health Program Evaluation

Final Report of the Subcommittee on Safe Pregnancy

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Acknowledgments

In April 1994, the United States Agency for International Development (USAID) requested that The EVALUATION Project establish a Reproductive Health Indicators Working Group (RHIWG). The purpose of the RHIWG has been to develop indicators for program evaluation in five areas of reproductive health: safe pregnancy, including post-abortion care, STD/HIV, breastfeeding, women's nutrition and adolescents. A steering committee, composed of staff from the USAID Center for Population, Health and Nutrition, and external organizations, has provided valuable guidance to the work of the RHIWG.

Following the first meeting of the RHIWG on June 8, 1994, in Rosslyn, Virginia, each of the subcommittees met several times, identified the indicators judged most useful for evaluating programs in their specific areas, and drafted descriptions of each indicator. Subsequently, the full Reproductive Health Indicators Working Group met on February 8, 1995 to review progress to date and draft a "short list of indicators" for each topic area. Further revisions were made, and each report was then externally reviewed by one or more experts in the topic area. Comments from the reviewers have been incorporated into the current reports.

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SHORT LIST OF INDICATORS

MATERNAL AND NEONATAL HEALTH

- Met need for emergency obstetric care (EmOC)
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- Percentage of perinatal deaths contributed by stillbirth and early neonatal death
- Case fatality rate (CFR) -- all complications
- Percentage of all adults knowledgeable about maternal complications of pregnancy and childbirth
- Percentage of all adults knowledgeable about neonatal complications
- Percentage of pregnant women with at least 2 doses of tetanus toxoid immunization
- Proportion of women attended at least once during pregnancy by trained personnel for reasons related to the pregnancy
- Number of facilities providing essential obstetric functions (EOF) per 500,000 population
- Admission-to-treatment time interval: percentage of women with obstetrical complications treated within 2 hours at a health facility
- Existence and implementation of a safe pregnancy strategic or operational plan
- Maternal mortality ratio and rate (MMR)¹

POST-ABORTION CARE

- Existence of service and administrative policy on the elements of post-abortion care
- Percentage of post-abortion care clients who receive counseling and referral or accept a family planning method at time of the service
- Number, type and geographic distribution of SDPs that have commodities, equipment and transport for post-abortion care
- Knowledge of and willingness to use services within the service area
- Facility case fatality rate (CFR) -- post-abortion complications
- Total number of admissions for abortion-related complications
- Compliance with provisions for maintaining confidentiality
- Compliance with provisions for protecting against coercion

¹ All other indicators listed are subject to annual review; MMR subject to decade review.

LIST OF ACRONYMS

AOD	Age of Death
AR	Abortion Rate
AVSC	Access to Voluntary and Safe Contraception
BW	Birth Weight
BWPMR	Birth Weight Specific Proportionate Perinatal Mortality Rate
BWSMR	Birth Weight Specific Mortality Rate
CDC	Centers for Disease Control and Prevention
CEDPA	Center for Development and Population Activities
CFR	Case Fatality Rate
CONRAD	Contraceptive Research and Development Program
CPD	Cephalo-pelvic Disproportion
D&C	Dilatation and Curettage
DHS	Demographic and Health Survey
EBR	Exclusive Breastfeeding Rate
END	Early Neonatal Death
EmOC	Emergency Obstetric Care
EOF	Essential Obstetric Functions
EsOC	Essential Obstetric Care
ICPD	International Conference on Population and Development
IEC	Information-Education-Communication
INTRAH	Program for International Training in Health
IPAS	International Projects Assistance Services
IPPF	International Planned Parenthood Federation
JHPIEGO	Johns Hopkins Program for International Education in Reproductive Health
LBW	Live Birth Weight
LND	Late Neonatal Death
MMR	Maternal Mortality (Rate/Ratio)
MVA	Manual Vacuum Aspiration
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NSC	Neonatal Special Care
PATH	Program for Appropriate Technology in Health
PMR	Perinatal Mortality Rate
RH	Reproductive Health
RVF	Rector-Vaginal Fistula
SDP	Service Delivery Point
TAR	Total Abortion Rate
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VVF	Vesico-Vaginal Fistula
WHO	World Health Organization
WRA	Women of Reproductive Age

Chapter I

Introduction

- Overview of the Safe Pregnancy Subcommittee Effort
- Background on Maternal and Perinatal Effort
 - Conceptual Framework of Safe Pregnancy Program Demand and Supply: Program Impact on Maternal/Perinatal Mortality and Improved Health
- Background for Post-Abortion Care Indicators
 - Conceptual Framework for Post-Abortion Care Indicators

OVERVIEW OF THE SAFE PREGNANCY SUBCOMMITTEE EFFORT

Having a safe pregnancy is widely considered to be an important reproductive right. Increasingly the pregnant woman is seen as an individual who merits full social support and comprehensive health care. Many health and social development programs are being examined for ways they can be strengthened to assure a healthy pregnancy experience by the woman, parent, and newborn. Safe pregnancy and safe motherhood initiatives are thus gaining prominence in the new agenda for reproductive health care.

Assuring healthy pregnancies requires investing in improvements at a range of levels, from households and families providing young girls with adequate nutrition, to health facilities being equipped to offer essential obstetric services, to communities arranging for emergency transport to hospitals when pregnancies become life-threatening.

Monitoring the progress of programs that organize services in support of safe pregnancy means observing positive change along a set of accepted markers. These markers, or indicators, of performance must be identified and selected in terms of their relevance and appropriateness for the service objectives at hand. Because many physiological, medical, social, policy, and behavioral issues influence how well program objectives

can be achieved, it is necessary to be familiar with some of these when choosing and operationalizing the "right" performance indicators. One of the primary purposes of this document is to provide some technical description and background on safe pregnancy indicators to guide their selective use.

In the Reproductive Health Indicators Working Group the work of the Safe Pregnancy Subcommittee has focused on needs in policy, programming, and services in support of healthy pregnancies, regardless of the latter's outcomes. In some cases the pregnancy may end involuntarily or voluntarily. In most cases the pregnancy will result in a live birth. In yet some other cases, an unhealthy pregnancy will end in a stillbirth or threaten the life of the newborn shortly after birth. This report of the Safe Pregnancy Subcommittee offers a range of indicators that address healthy interventions for pregnant women, including post-abortion care, and for newborns. The report begins with background on the significance of safe pregnancy indicators for maternal and child health and for post-abortion care. Indicators for the woman and the newborn are then presented, linked by a common conceptual model. Lastly, indicators that address care for unsafe abortions are presented, again informed by a similar conceptual model.

BACKGROUND ON MATERNAL AND PERINATAL EFFORT

Definition of the Problem

"Safe pregnancy" refers to improved pregnancy outcomes for a woman and her newborn, not just in terms of survival, but in health as well. A program aimed at making pregnancies safe envisions both a demand and a supply side, as conceptualized in Figure 1. This framework summarizes the way in which inputs of a program are converted through processes (activities) to produce results in the program level (outputs) and eventually changes at the population level (outcomes). The supply-demand framework describes how maternal and perinatal health interventions are expected to impact on population-based behaviors.

On the demand side, the framework suggests that societal and individual factors influence the value placed on women and newborns, the health and nutritional status of women (and consequently of newborns), and the demand for children. These factors influence pregnancy status and the demand for services. Use of appropriate services that are supplied will result in reduced maternal and perinatal mortality and improved health for the woman and her newborn. In the case of the newborn, services are not the only alternative; improved health behaviors may also result in decreased perinatal mortality and improved newborn health.

For example, in a country where women experience low status, a high level of infection and poor nutrition, the value placed on the woman's life should she suffer a complication is probably also low. These societal

values are likely to affect her behaviors during and beyond pregnancy, and the family desire for the infant, which all influence outcomes. Appropriate service demand depends largely on her pregnancy status: if normal, many types of providers may be appropriate. But maternal complications, specifically hemorrhage, sepsis, prolonged/ obstructed labor, septic abortion and hyper-tensive disorders of pregnancy (the five major complications that can result in the death of the woman), and those that kill a newborn (asphyxia, birth injury, sepsis, tetanus, and others mediated through low birth weight) require more specialized care available most likely at a greater distance and cost to the family. Recognition of these complications and appropriate and timely response, by the family and by the providers, are paramount in saving the lives of the woman and the newborn.

Supply or program level factors include the political and administrative system, organizational structures, service and operational elements. The cumulative effect of these factors are reflected in the availability, access, quality, image and acceptability of services offered at designated delivery sites.

The service response to the maternal and newborn complications that result in 500,000 maternal deaths and 7 million stillbirths and early neonatal deaths each year, must include the essential obstetric functions (EOF) and appropriate prenatal care.

Defined by WHO in 1987, EOF includes:

- surgical obstetrics;
- anesthesia;
- medical treatment;
- blood replacement;
- manual procedures and monitoring of labor;
- management of women at high risk;
- family planning support; and
- neonatal special care.

Emergency obstetric care (EmOC) is a subset of EOF, including only those functions that address the needs of women with the severest of obstetrical complications, estimated to occur in 15 percent of pregnant women. Directed at saving women's lives, EmOC includes blood and IV transfusion; parenteral antibiotics, oxytocic and sedatives; Cesarean section, ventouse or forceps delivery; and manual removal of the placenta and evacuation of retained products of conception. Suturing, laparotomy and hemoglobin estimation would also be included.

Yet approximately 40 percent of women may suffer some degree of complication in their pregnancy, and the severity of complications and ensuing deaths may be decreased by having a broader array of essential obstetric care services in place (EsOC). Actually preventing the complications from occurring has proved difficult, but the severity of some complications could be ameliorated through "preventive" efforts initiated soon after onset of labor (specifically the partograph to monitor and prevent prolonged labor) or soon after onset of the complication itself (bimanual compression for early hemorrhage). EsOC includes the partograph and maternal waiting homes plus all the elements listed in EmOC.

Neonatal special care within EOF, as defined

by WHO originally, refers to the ability to resuscitate a newborn, but other means, such as exclusive and immediate breastfeeding, warming, hygienic cord care and eye care can prevent as well as treat some of the newborn complications. Taken together, these elements are referred to as Neonatal Special Care (NSC). (See Table 1).

The availability, access, and quality of these components of care, plus their acceptability and efficiency, contribute to the demand for their use by women and their families. To ensure services have such characteristics requires supportive operations such as management and supervision; training; commodity acquisition and distribution; information, education, and communications efforts (IEC); and alarm and transport systems.

Policy focused on improving the survival and health of women and their newborn underpins this entire program. It can take the form of political statements, committees, operational plans, budget allocations, regulations and legislation, with obvious outputs in terms of service delivery points that provide all the essential obstetric functions, or those dedicated to only a portion of these services, such as emergency obstetric care or neonatal special care.

Selecting the Indicators

A subcommittee on Safe Pregnancy was convened to discuss the types of indicators that would capture the key aspects of a safe pregnancy program. The indicators presented are based on the discussions plus individual or group efforts to define each indicator. As programming in this field is still in its infancy, the indicators presented should be considered experimental. These are not universal indicators but rather illustrative and must be prioritized and adapted for programs when they are implemented.

The subcommittee met four times, but smaller groups working on specific types of indicators met or communicated with each other more often and may have brought in others with

expertise in a particular field. For example, the Perinatal/Neonatal Indicators required a special separate meeting with others from CDC and WHO.

A June, 1994 meeting determined the participants and dates of further sub-committee meetings. In September, 1994, the second meeting focused on a conceptual framework, the maternal mortality and health indicators already recommended by WHO and UNICEF and possible modifications required addressing the broader theme of safe pregnancy. Groups/individuals were designated to work on indicators to measure policy, community awareness and response/ use of services, quality of care, and perinatal/

neonatal indicators. Discussions held in a November 1994 meeting focused on final revisions of these indicators and identified continuing gaps. A final February 1995 meeting focused on a short list of primary indicators for safe pregnancy.

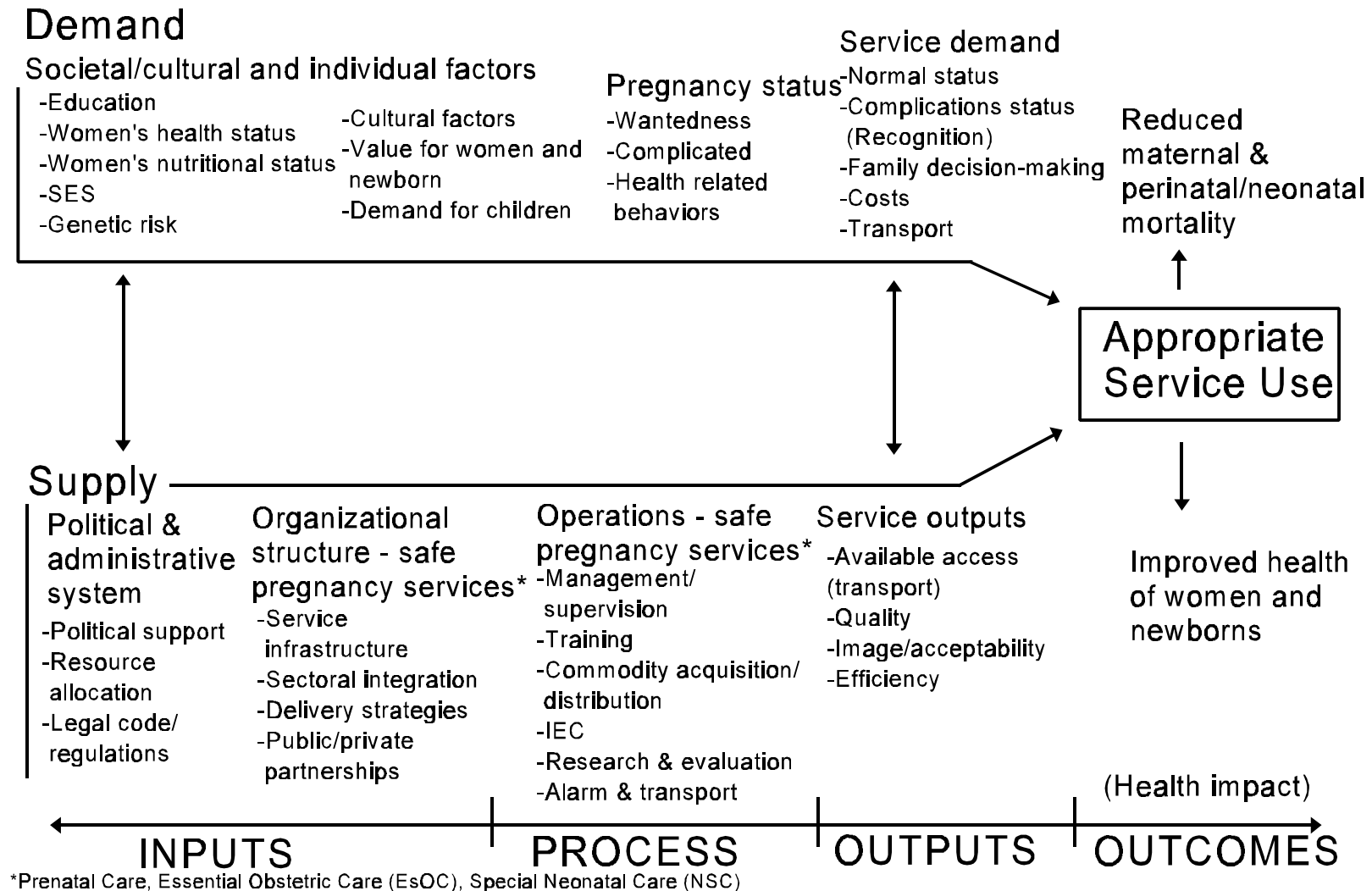
The indicators attached bring together all the efforts of the subcommittee throughout this period of time. As previously stated, these indicators are our best guess of what is key to measure for a program aimed at improving the health and survival of pregnant women and their newborns. They should be considered experimental and require adaptation and field testing at the program level.

Table 1: Essential and emergency obstetric care and functions and neonatal special care*

Intervention	Essential Obstetric Functions (EOF)	Essential Obstetric Care (EsOC)	Emergency Obstetric Care (EmOC)	Neonatal Special Care (NSC)
Maternal waiting home	Y	Y	N	N
Partograph	Y	Y	N	N
Hemoglobin estimate	Y	Y	Y	N
Blood transfusion	Y	Y	Y	N
IV transfusion	Y	Y	Y	N
Antibiotics/oxytocic	Y	Y	Y	Antibiotics
Pre-eclampsia management	Y	Y	N	N
Eclampsia management	Y	N	Y	N
Cesarean section	Y	Y	Y	Y
Ventouse/forceps	Y	Y	Y	N
Manual removal of placenta	Y	Y	Y	N
Evacuation of retained products of conceptus	Y	Y	Y	N
Suturing	Y	Y	Y	N
Laparotomy	Y	N	Y	N
Resuscitation	Y	Y	Y	Y
Family planning	Y	N	N	N
Breastfeeding	Y	N	N	Y
Warming	Y	N	N	Y
Hygiene	N	N	N	Y
Neonatal eye care	N	N	N	Y

*Draft list of service elements presently under discussion at WHO, UNDP, UNICEF, UNFPA and MotherCare

Figure 1: Conceptual Framework of Safe Pregnancy Program Demand and Supply: Program Impact on Maternal/Perinatal Mortality and Improved Health



BACKGROUND FOR POST-ABORTION CARE INDICATORS

Definition of the Problem

The international population and reproductive health community has begun to focus much needed attention on the issue of unsafe abortion. At the September 1994 International Conference on Population and Development (ICPD), unsafe abortion was recognized as a significant and devastating public health problem. Of the estimated 53 million abortions induced annually, about 20 million are unsafe -- performed by unqualified persons or in unhygienic conditions. Individual country data reported by the World Health Organization suggest that complications of unsafe abortion directly cause 10 to almost 60 percent of maternal mortality. Globally, at least 70,000 women die every year from complications of unsafe abortion, and many hundreds of thousands more suffer long-term complications such as chronic pelvic pain and infertility. Ninety-nine percent of maternal deaths occur in the developing world.

Death and disability from unsafe abortion are unnecessary and preventable. The needs of women who have undergone abortion can and must be addressed forthrightly by health system administrators, health care providers, and policy makers. As professionals in this field have known for years, the clinical, technological and managerial expertise required to prevent many unsafe abortions and their consequences already exist(s) and need(s) only to be applied. The concept of post-abortion care, described below, defines the elements of care which must be implemented to effectively reduce the maternal mortality and morbidity resulting from unsafe abortion.

The Reproductive Health Indicators Working Group of The EVALUATION Project created its Post-Abortion Care Group to develop an

important component of this implementation challenge. The Group's task -- to create indicators by which post-abortion care programs and population-based measures can be evaluated -- was envisioned by its members as more than an evaluation tool. The indicators offer policy makers and program planners an outline of the issues to be considered in creating or strengthening post-abortion care programs. It is important to note that while there may be legal, regulatory or judicial restrictions on induced abortion, there is international agreement that no ethical rationale exists for denying women post-abortion care.

Post-Abortion Care

In much of the developing world where the problems of unsafe abortion are the greatest, women often lack access to adequate care for complications of unsafe or spontaneous abortion. In September 1993, a group of organizations came together to support the concept of post-abortion care (originally developed at IPAS) as a practical strategy for reducing maternal mortality and morbidity from unsafe abortion in these settings. (The Post-Abortion Care Consortium was initiated by five organizations: AVSC International, IPAS, IPPF, JHPIEGO and Pathfinder International. Since that time other groups have joined the effort, including the Center for Communication Program at Johns Hopkins, CONRAD, Family Care International, MotherCare, PATH and the Population Council. The Consortium welcomes organizations interested in post-abortion care issues to join in promoting improved access to a full range of post-abortion services.)

The Post-Abortion Care Group has adopted the consortium's definition as follows:

- **Emergency treatment services for incomplete abortion and related complications.** Improving access to emergency treatment requires that services be decentralized and made available closer to where women live. This is best accomplished by shifting the technology for treatment procedures from in-patient sharp curettage (also called D&C) to outpatient vacuum aspiration. Particular advantages for decentralization come with the use of manual vacuum aspiration (MVA).
- **Post-abortion family planning counseling and services to prevent future unwanted pregnancies.** A full range of contraceptive methods, accurate information, sensitive counseling and referral for ongoing care must be available and accessible to all women who have undergone abortion. At the very least, women treated for complications of abortion must be made aware that they will have an almost immediate return to fertility, that there are ways to prevent future unwanted pregnancies and where contraceptive services can be obtained.
- **Linkage of emergency abortion treatment services to comprehensive reproductive health services to improve women's overall health.** Many women who seek emergency treatment for complications of unsafe abortion have no other contact with the health system. This makes provision of post-abortion care an important opportunity to help women find other kinds of care that they need.

Integrating Post-Abortion Care into Reproductive Health Programs

Post-abortion care is still an emerging issue on the international reproductive health scene. Part of the neglect of women who have experienced an unsafely induced or spontaneous abortion and require medical attention has been a failure on the part of reproductive health professionals to acknowledge these conditions as a threat to women's lives and health and to plan appropriately for their care. As with other reproductive health services, a thoughtfully designed program for post-abortion care

integrated into other reproductive health care services can maximize chances to save women's lives.

An integrated approach to post-abortion care would have, at a minimum, the following three attributes: 1) that it address the needs of different levels in a health-care system, with the ultimate goal of improving the quality and access of services made available to clients; 2) that it is consolidated into existing activities from policy through training to service delivery; and 3) that information and education on post-abortion care as an effective approach to reduce maternal mortality and morbidity continue to be made widely available to policy makers and health care providers internationally, nationally and locally.

To date, research and programming in post-abortion care have been conducted on a limited basis by only a few international organizations in partnership with selected ministries of health. There is, however, a large enough body of work to identify a number of the barriers that women typically experience in seeking post-abortion care. With these in mind, program planners, health care administrators and evaluators can work to minimize these difficulties. Experience also suggests some of the positive attributes of program design and service delivery that can enhance women's access to prompt, appropriate post-abortion care.

The following describe some of the limitations that can hinder post-abortion care programs:

- an inadequate service delivery system that offers a small number of service delivery points and has insufficiently trained providers;
- the centralization of post-abortion care services in urban settings, limiting the geographic proximity of most women to services;
- unaffordable cost to the woman, including fee for the procedure, purchase of medical supplies, and opportunity costs of time away from family and work;
- lack of knowledge about the availability of services; and

- punitive, coercive or other non-supportive attitudes on the part of providers and others in the service delivery setting or within the community toward women who seek services.

Areas for attention that can facilitate the availability of high-quality post-abortion care include:

- avoiding delay in providing medical treatment for complications of spontaneous or unsafely induced abortion, including a functional referral and transport system;
- availability of skilled staff and appropriately equipped facilities at accessible service delivery sites;
- use of appropriate uterine evacuation technology;
- availability of the required equipment, supplies and medications to provide complete care;
- respectful interactions between women and health care providers and other staff of health facilities;
- accurate information and compassionate counseling to address all aspects of post-abortion care; and
- assessment with each woman of the appropriate timing to provide her with information and/or services for post-abortion family planning and other reproductive health services based on her physical and emotional circumstances.

The Difficulty of Data Collection

The indicators included in this report have been developed with full recognition of the difficulty of collecting data on abortion-related subjects. Experience with data collection for family planning programs has taught researchers and program planners that sensitive information concerning women's reproductive health can be collected both in service facilities and through large surveys. Yet abortion remains a clandestine act in many countries. Relevant statistics are under-

reported, reported as something else, or not reported at all in many settings. The indicators developed by the Subcommittee must be viewed as prototypes of the statistics that should be collected and where and how to collect them. However, the secrecy surrounding abortion dictates that efforts to collect such information from women and providers should be handled sensitively with attention to issues of confidentiality.

In the wake of the endorsement of the ICPD's Programme of Action's paragraph 8.25¹, countries are seeking guidance on how to deal with the health impact of unsafe abortion, how to institute policy reforms and how to provide the necessary related services. USAID, as a recognized leader in the design, implementation and evaluation of family planning and other reproductive health programs that serve to improve women's health, has an opportunity to shape the way in which post-abortion care programs are introduced throughout the developing world. Indicators included in this report may be tailored for use across a variety of legal and cultural contexts and by a range of consumers as a way to improve efforts to protect women from unnecessary morbidity and mortality associated with unsafe abortion.

Conceptual Framework

A conceptual framework for post-abortion care was developed to guide the definition and selection of indicators in this area. The framework is related to the one used for safe pregnancy (see p. 12 and 15). The framework differentiates program from population results so that programs are interventions that have outcomes at the population level. Whether formally organized or not, two key program components frame and orient post-abortion care, as they do safe pregnancy care, at the national level -- the

¹ Programme of Action, International Conference on Population and Development, Cairo, Egypt, September 1995.

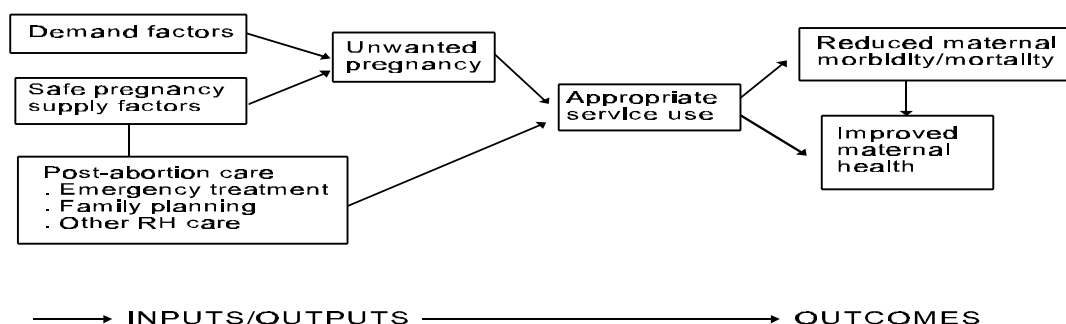
policy environment and resource inputs. Elements of these include organizational structure; policies, laws and regulations; and budgets/finances. The inputs are utilized for service operations, such as appropriate training, IEC, commodities and logistics, management and research/evaluation. These operational areas constitute program implementation or process. They produce outputs (or results) at the program level, such as the availability and quality of post-abortion care. As in the safe pregnancy framework (p. 15), appropriate service use for post-abortion care includes such elements as emergency treatment of post-abortion complications and post-abortion family planning and other reproductive health care.

A parallel set of influences operates at the population level. Most models for behavioral change among individuals concentrate on non-program attributes, such as an individual's social and economic status, ethnicity or religion. These individual attributes affect the demand for post-abortion care through their influence on the occurrence of unwanted pregnancies. Thus the interplay of interest is the one between the level of risky outcomes (unwanted pregnancies), availability of post-abortion services, and appropriate service use. Together these can affect reproductive health status.

Selecting Post-Abortion Care Indicators

Following a brief assembly during the first Reproductive Health Indicators Working Group meeting in June 1994, the Post-Abortion Care Group held its first full-day meeting July 19, 1994 at The Futures Group, International conference room in Washington, DC. At that meeting the Group developed a list of potential indicators for monitoring post-abortion care. These indicators were organized along an evaluation framework (input-process-output-outcome) by a "sub-Group" that met at the Carolina Population Center in Chapel Hill, North Carolina on September 6, 1994, and assigned to Group members for drafting. The drafted indicators were reviewed at a second full-day meeting of the Group held on October 25, 1994 at Family Health International, Research Triangle Park, North Carolina. Guidelines for revision were provided. The "sub-Group" met again to address unresolved issues, such as how to map existing indicators to IPAS' existing Quality of Care framework, on November 21, 1994 at the IPAS office in Carrboro, NC. The final draft of the indicators was compiled for inclusion in the full set of reproductive health indicators distributed to the RHIWG Steering Committee meeting on December 14, 1994. The introduction was prepared in January 1995 and reviewed by the Group's Technical Specialist.

Figure 2:
Safe pregnancy program demand and supply as related to post-abortion care:
A conceptual framework



Chapter II

Maternal Health

- Section A: Outcomes and Outputs
- Section B: Policy, Operations, Community-Level Outputs

OUTCOMES AND OUTPUTS

Outcomes

- Maternal mortality ratio and rate (MMR)
- Met need for emergency obstetric care (EmOC)

Outputs

- Admission-to-treatment time interval: percentage of women with obstetrical complications treated within 2 hours at a health facility
- Time of hospital maternal death from time of admission - measuring access barriers
- Time of hospital maternal death from time of admission - measuring quality of care barriers
- Case fatality rate (CFR) -- all complications
- Percentage of deliveries done by cesarean section
- Proportion of women attended at least once during pregnancy by trained personnel for reasons related to the pregnancy
- Percentage of women having an antenatal care visit during the last month of their most recent pregnancy
- Proportion of births attended by trained health personnel
- Percentage of women who had symptoms of major obstetric complications during their most recent delivery (according to the place of delivery)
- Number of facilities providing essential obstetric functions (EOF) per 500,000 population

Indicator

MATERNAL MORTALITY RATIO AND RATE (MMR)**DEFINITION**

Maternal mortality ratio: The number of maternal deaths per 100,000 live births. Sometimes 1,000 or 10,000 live births is used instead. The maternal mortality ratio is calculated as:

$$\text{MMRatio} = \frac{\text{all maternal deaths occurring in one year}}{\text{\# of live births occurring in the same year}} \times k$$

Maternal mortality rate: the number of maternal deaths per 100,000 women of reproductive age variously defined as 15-44, 10-44, 15-49 or 10-49 years.

$$\text{MMRate} = \frac{\text{all maternal deaths occurring in one year}}{\text{\# of women of reproductive age}} \times k$$

A maternal death is a death to a woman who is currently pregnant or who has been pregnant in the last 6 weeks. Sometimes the last 3 or 12 months is used instead. The outcome of the pregnancy (live birth, still birth, miscarriage, induced abortion, ectopic or molar pregnancy) is not relevant. The cause of death is relevant; it is a maternal death if it is caused directly by the pregnancy (including those deaths which result from treatment of complications) or if the pregnancy aggravates another condition. Not usually included are "accidental and incidental deaths" such as traffic accidents or deaths from conditions (such as most cancers) which are unaffected by the pregnancy. But there is a growing trend (see WHO ICD-10) to include all deaths so that

a measure of maternal mortality, defined solely on the basis of its temporal relation to pregnancy (like infant mortality) is available.

Illustrative Computation

Maternal death	=	37
Total population	=	372,450
Women of reproductive age	=	74,490
Crude birth rate	=	41.3

$$\text{Ratio} = \frac{37}{372,450 \times 41.3/1000} \times 100,000 = 240.5$$

$$\text{Rate} = \frac{37}{74,490} \times 100,000 = 49.7$$

DATA REQUIREMENTS

- Numerator: the number of maternal deaths (as defined) in the defined time period. This is usually very difficult to determine. It is not acceptable to include only deaths which occur in hospital.
- Denominator: the number of live births or the number of women of reproductive age in the same period. This can be estimated from the known size and composition of the population and the known crude birth rate.

DATA SOURCE(S)

Usually multiple sources are necessary to be certain the numerator is complete. All of the

following have been used: vital statistics, hospital death reports, morgue reports, cemetery reports, newspaper reports, house-to-house surveys, key informants, and village leaders.

The denominator is derived from vital statistics and population censuses. The United Nations Statistical Office is the best source of information outside national governments.

There are some who argue for expanding the denominator to include stillbirths and abortive outcomes, i.e. to make the denominator all pregnancies. Countries where maternal mortality is high are more likely to have incomplete reporting of stillbirths and no reporting of abortive outcomes, thus inflating their estimates of maternal mortality. To use only live births inflates the ratio where the stillbirth rate is high (by reducing the denominator). Nevertheless, this limitation is well understood, and it is important to maintain the simpler measure for reasons of comparability over time and place.

PURPOSE AND ISSUES

The maternal mortality ratio is the most widely used measure of maternal mortality. It measures obstetric risk once a woman becomes pregnant. The closely related maternal mortality rate (whose denominator is the number of women of reproductive age) measures the risk of dying and includes the likelihood of both becoming pregnant and dying during pregnancy or the puerperium.

The maternal mortality ratio has been misused in the past when it has been limited to a single hospital. A hospital maternal mortality ratio is an almost meaningless statistic as it takes into account neither the deaths in the communities of the catchment area, nor the mix of patients who are admitted to the hospital (emergencies/scheduled admissions, local residents/women coming from beyond the community, early complications/moribund cases).

If the intention is to measure baseline or progress in reproductive health services, the maternal mortality rate is the better measure as it incorporates progress in family planning use as well as progress in maternity services.

If the intention is to measure progress in maternity services, maternal mortality ratio is the better

measure. But it is essential to remember that both rate and ratio measure the sum of processes necessary for safe delivery which includes the skill and training of the attendant at delivery, the ability to refer when complications occur, the availability of transport for referral, the willingness of families and communities to refer and the ability to pay for it, and the resources (human and material) available in the place of referral. Thus it should be recognized that an improvement in any one alone of the above will not necessarily lead to a change in the ratio/rate.

Measuring the maternal mortality ratio or rate is often undesirable for the following reasons:

- there are difficulties associated with its measurement;
- because the difficulties are well recognized, unexpected results are difficult to interpret;
- measurement is expensive and time consuming, and can distract policy makers from the need to begin interventions; and
- lack of change in the measure does not necessarily mean that progress has not been made.

Practical considerations: Unless there is an excellent vital registration system in the country, conducting a survey is the most practical way to get estimates of the maternal mortality ratio and rate (this applies to all statistics in which maternal deaths are the numerator). Survey methods differ in several attributes. The sisterhood method is the most efficient way to identify maternal deaths. Because adults living in the household can give information about a larger pool of people, a relatively small sample is required. A house-to-house survey (such as one conducted in Addis Ababa, Ethiopia) generally

needs a larger sample size. But household surveys usually produce estimates that refer to a short period of time (usually 1-3 years) whereas the sisterhood method gathers information about deaths among respondents' sisters whenever they died, yielding an estimate of the level of mortality 1-12 years before the study. This may not reflect current mortality. To assess progress, one would have to wait 10 years to measure change. The Addis Ababa survey mentioned interviewed 9315

respondents and identified 45 maternal deaths. A sisterhood survey in the Gambia interviewed 2163 respondents and identified 91 deaths.

If survey methods are to be useful in monitoring trends in maternal mortality, then they must be evaluated in terms of their ability to detect significant changes in maternal mortality over time. Confidence limits were calculated for the estimates derived from the Addis Ababa and the Gambia surveys, and for repeat surveys of identical size. If there had been 50 percent decline in maternal mortality, the results would have been "significant" for the Gambia, but not for Addis Ababa. A 25 percent decline would not be "significant" even for the Gambia.

Clearly this has important implications for monitoring progress in the reduction of maternal mortality. First of all, to get an idea of the national level of maternal mortality, it would be necessary to either do a series of relatively small surveys in various regions, or to do a single large survey with a nationally representative sample. A series of small surveys would provide detail on variation within the population but would be burdensome to do. A single large survey would be easier, but would not provide information useful for program planning at the regional level unless sample sizes were even greater. The reason for this is that in order to compare, for example, the level of maternal mortality in two regions of a country, the total number of deaths would have to be divided and analyzed separately. This would decrease the number of deaths in each sub-study. As always, decreasing the number of cases increases the margin of error around the estimate, and decreases the confidence we can have in the findings.

In addition to the reliability and usefulness of the findings, there is the issue of cost. Even relatively small cluster surveys (such as those being used by UNICEF to assess immunization programs) entail considerable expense, especially if they are to be done well.

Table 2: Maternal mortality ratio and rate: International comparisons

Major area and region	Maternal Mortality	
	Per 100,000 live births	Per 100,000 women aged 15-49
World	390	45
More developed regions	30	2
Less developed regions	450	60
Africa	640	129
Eastern Africa	660	142
Middle Africa	690	135
Northern Africa	500	89
Southern Africa	570	81
Western Africa	700	156
Latin America	270	34
Caribbean	220	22
Central America	240	34
South America	280	35
Asia	420	49
Eastern Asia	55	41
South-eastern Asia	420	56
Southern Asia	650	106
Western Asia	340	56

Source: World Population Monitoring 1991, with Special Emphasis on age structure, United Nations, p. 116.

Indicator

Indicator

MET NEED FOR EMERGENCY OBSTETRIC CARE (EmOC)

DEFINITION

The proportion of women estimated to have direct obstetric complications that are seen in EmOC facilities.

This is calculated as:

Complicated cases in EmOC facilities in a defined time period

Estimated direct obstetric complications among pregnant women in the same time period

Where:

- A "complicated case" is a woman who is diagnosed as having any one of the following conditions:
 - hemorrhage (ante-partum & post-partum);
 - prolonged/obstructed labor;
 - post-partum sepsis;
 - complications of abortion;
 - pre-eclampsia/eclampsia;
 - ectopic pregnancy; or
 - ruptured uterus.

If the woman has more than one of these complications, select the most immediately life-threatening one.

- "in EmOC facilities" includes both women admitted with the complication and women who develop the complication in the facility.

- EmOC facilities in this indicator include 2 levels:
 - Basic: parenteral antibiotics, oxytocic, and sedatives; manual removal of the placenta; removal of retained products of conception; and assisted (vaginal) delivery.
 - Comprehensive: all of the above, plus obstetric surgery and blood transfusions.

- Estimated direct obstetric complications = 15% of all births in the population during the time period. This is a low (if not minimum) estimate. WHO estimates are considerably higher: Hemorrhage 10% of pregnancies; sepsis 8%; hypertensive disorders of pregnancy (including eclampsia 5%); obstructed labor 5% (WHO Mother-Baby Package, 1994).

DATA REQUIREMENTS

- Numerator: A count of complicated cases in EmOC facilities during the time period.
- Denominator: Estimated births in the population during the time period.

DATA SOURCE(S)

- Numerator: Facility records.

Prepared by D. Maine, Columbia University Center for Population and Family Health.

- Denominator: Demographic surveys (e.g., DHS), census.

PURPOSE AND ISSUES

The purpose of this indicator is to gauge what proportion of the need for EmOC is being met. The focus is on the major causes of direct obstetric deaths in developing countries and the medical procedures that can avert these deaths. Clearly, this is only one component of reproductive health care. When presented in combination with indicators relating to other important services -- e.g., family planning services, newborn care -- a clear picture will emerge of which program elements need strengthening. In contrast, an indicator encompassing various elements and services would be less clear about what needs to be done.

This is an indicator, an instrument for measurement, not a complete list of the services that should be provided. Consequently, there are valuable services that are not included in the definition of EmOC facility. For example, use of the partograph can be beneficial, but it is not included here. While recommended, the partograph is not in use in many facilities that provide all the life-saving services listed above. Also, adding this to the definition of the indicator would increase the complexity of the data gathering process.

Causality: There is general agreement that access to and prompt utilization of good quality EmOC is directly and causally related to the level of maternal mortality in the population.

Feasibility: In some facilities (especially those providing Basic EmOC) it will be necessary to revise the record keeping system somewhat in order to have data on complicated cases routinely gathered in a way that makes them readily accessible. For example, in many facilities information on complications are available only if one searches through individual patient files. This is time consuming and will discourage routine collection of this information. A better system is to have major complications recorded in the patient register (e.g.,

the maternity logbook). It is also important to make sure that information is gathered not just from the maternity ward, but from all relevant parts of the facility (e.g., the gynecology ward, the surgical ward, for women with ectopic pregnancies, the morgue).

While revising record systems should not be undertaken lightly, in this case it is worthwhile. These data will provide valuable information for monitoring activities at the district, national and international levels.

Responsiveness: This indicator should respond quickly to changes in availability and quality of services, and in service utilization.

Population- or Facility-Based: While the data for this indicator are gathered in facilities, it provides an estimate of the level of need for EmOC in the population that is being met.

Interpretation: While this indicator may be used as a gauge of the level of EmOC activity in an area, it can not tell you what needs to be done. If the proportion of need being met is low, it is not possible to distinguish where the problem lies. It may lie in the availability, accessibility or quality of care being provided, or it may lie in utilization of the services (or, most probably, both). Further investigation is then required.

Early experience with this indicator in India and Bangladesh shows that in countries where maternal mortality is a major problem, the proportion of the need for EmOC that is being met will be well under 100%, and even under 20%. In some places (chiefly in developed countries) the proportion of women estimated to have complications managed in EmOC facilities may be greater than 15% of births (or more than 100% of the estimated direct obstetric complications). It may be unsettling to see a ratio of more than 100%.

One reason why the proportion of need being met could be greater than 100% is that, in

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reality, more than 15% of pregnant women in the population develop these obstetric

complications. This is especially likely when the incidence of unsafe abortion is very high, because this would substantially increase the proportion of women who develop a complication in that population.

It seems unlikely that "double-counting" of women who are admitted to more than one facility, or who are admitted to the same facility more than once during a pregnancy, will bias the results. In any case, if they did, the effect would be to give a more positive impression of the health system than it merits, rather than an unfairly negative impression.

Indicator

ADMISSION-TO-TREATMENT TIME INTERVAL: PERCENTAGE OF WOMEN WITH OBSTETRICAL COMPLICATIONS TREATED WITHIN 2 HOURS AT A HEALTH FACILITY

DEFINITION

of women admitted with hemorrhage, eclampsia, septic shock or obstructed labor treated within 1-2 hours of arrival

 # of women admitted with any one of the above complications

Time interval from admission for emergency cesarean section to time performed.

DATA REQUIREMENTS

- Date and time of admission
- Date and time of treatment/delivery
- Details of condition of woman on admission and treatment

DATA SOURCE(S)

- Admissions register
- Labor ward register

Prepared by M. Koblinsky, MotherCare.

- Operating theater register
- Medical audit case records

PURPOSE AND ISSUES

The indicator is a proxy for quality of care. While most facilities record dates of arrival and operation, time will also need to be recorded. The condition of the woman would be helpful in interpreting the urgency for treatment, but may be difficult to analyze on a large scale.

This indicator will help assess:

- emergency preparedness (how fast complicated cases can be managed); and
- availability of trained personnel, equipment and medicine.

Indicator

TIME OF HOSPITAL MATERNAL DEATH FROM TIME OF ADMISSION - MEASURING ACCESS BARRIERS

DEFINITION

All maternal deaths within 24 hours of hospital admission

-

All hospital maternal deaths

Use data for one year for both numerator and denominator.

DATA REQUIREMENTS

Registration date/time of pregnant woman (or woman post-abortion or post-partum) admission. Date/time of her death. All hospital maternal deaths within same time frame (1 year).

DATA SOURCE(S)

Diagnosis of death, case records, admissions register, labor/operating theater registers

PURPOSE AND ISSUES

This indicator is one of two measuring barriers to decrease maternal deaths that occur in-hospital. Many women arrive too late to services to be treated. Others arrive in time

but management is faulty. This indicator aims to measure the first barrier by giving the percent of hospital maternal deaths that occur within the first 24 hours of admission. It is anticipated that those women who die within this 24 hour period have entered the hospital in a status too difficult to manage. We feel this is a conservative time frame, erring on the side of more deaths due to access issues rather than quality of hospital care.

Causality: Direct link with maternal mortality.

Feasibility: Feasible to measure. Accuracy has been a problem when all hospital maternal deaths were assumed to indicate quality of care. This indicator should not stimulate providers to turn women away who are in a moribund state.

Responsiveness: This indicator, along with its complement (below), should be responsive to change within a short period (yearly).

Population or Facility-based: Facility.

Prepared by M. Koblinsky, MotherCare.

Indicator

TIME OF HOSPITAL MATERNAL DEATH FROM TIME OF ADMISSION - MEASURING QUALITY OF CARE BARRIERS

DEFINITION

Maternal deaths in hospital occurring 24 hours or more post-admission

--
All hospital maternal deaths

DATA REQUIREMENTS

Registration date/time of pregnant woman (or woman post-abortion or post-partum) admission. Date/time of her death. All hospital maternal deaths within same time frame (1 year)

DATA SOURCE(S)

Diagnosis of death (cut off is 42 days post-delivery as per ICD 10), case records, admissions register, labor/operating theater registers.

PURPOSE AND ISSUES

This indicator (the complement to the pre-

Prepared by M. Koblinsky, MotherCare.

ceding indicator) measures the quality of hospital care for pregnant (or post-abortion or post-partum) women, assuming that all those who die 24 hours or more after admission to the hospital could have been managed by appropriate services. This timing may be too long and earlier cut-off points could be tried to distinguish women who arrive in a morbid state versus those who could have been saved if the quality of care were improved.

Causality: Linked with maternal mortality.

Feasibility: Feasible from existing records.

Responsiveness: This indicator should be sensitive to program interventions on a yearly basis.

Population or facility-based: Facility.

Indicator

CASE FATALITY RATE (CFR) -- ALL COMPLICATIONS

DEFINITION

Deaths from specific complications in the facility during the time period

Complicated obstetric cases in the facility during the specified time period

Where:

- Deaths from the following complications are included:
 - hemorrhage (ante-partum & post-partum);
 - prolonged/obstructed labor;
 - post-partum sepsis;
 - complications of abortion;
 - pre-eclampsia/eclampsia;
 - ectopic pregnancy; and
 - ruptured uterus.
- Complicated cases = women diagnosed as having one or more of the conditions listed above.

DATA REQUIREMENTS

- Numerator: A count of the deaths from the specified complications in the facility during the time period.
- Denominator: A count of cases of these complications in EOF or EmOC facilities during the time period.

DATA SOURCE(S)

- Numerator: Facility records

- Denominator: Facility records

PURPOSE AND ISSUES

This indicator expresses the likelihood that a woman with an obstetric complication will live after entering the medical facility.

Causality: Clearly, the CFR is closely related to maternal mortality, at least at the facility level. What relationship this has to maternal mortality in the population depends on the proportion of women with obstetric complications who are managed in facilities. The higher the proportion of women with complications managed in facilities, the closer the relationship between CFRs and the level of maternal mortality in the population.

Feasibility: Once data on complications are being collected, this is relatively easy to calculate.

Responsiveness: This should respond to changes within a fairly short period of time -- e.g., 6-12 months.

Population- or Facility-Based: Facility-based.

Interpretation: The case fatality rate is affected not only by the quality and promptness of medical care provided in the facility, but also by the condition of the woman upon admission.

Based on a review of the international litera-

ture, a minimum acceptable level of 1% for case fatality has been proposed in the UNICEF Guidelines (Maine, McCarthy & Ward, 1992). At present, in developing countries the case-fatality rate has been used only in West Africa (*Prevention of Maternal Mortality Network*, forthcoming). This statistic and (standards for acceptable levels) may need to be refined once there is more information available from sites around the world.

Where the number of complicated cases is small, the CFR will not be stable enough to be meaningful. If there are a large number of cases, then CFRs can be calculated for particular complications.

As we gather case-fatality information from a variety of settings in developing countries, we will see whether certain limitations should be suggested when comparing CFRs from different institutions or settings. For example, it may not be valid to compare CFRs from health centers and hospitals, since women

with serious complications may be referred to the hospital at the last moment, where they die. This would lower the CFR at the health center and raise it at the hospital.

One way to disentangle the components of the CFR is to gather information on other indicators of quality of care. For example, you can analyze the admission-to-treatment time interval (either for all complications or for a subset, such as prolonged/obstructed labor). Although there is only a little experience with this statistic, experience in West Africa shows that, in general, facilities with long waiting periods for emergency treatment also have relatively high CFRs (*Prevention of Maternal Mortality Network*, in press).

A more complicated, but informative, exercise is to gather information about the condition of the women on admission (e.g., pulse, blood pressure and temperature). This helps disentangle the effect of patients' condition from that of the quality of care.

Indicator

PERCENTAGE OF DELIVERIES DONE BY CESAREAN SECTION

DEFINITION

The percent of live births in a defined population that were delivered by cesarean section.

This is calculated as:

$$\frac{\text{\# of cesarean deliveries performed in a defined area and time period}}{\text{total \# of live births in the area in the time period}} \times 100$$

DATA REQUIREMENTS

- Numerator: the number of cesarean deliveries performed in a defined area or population in a defined period of time.
- Denominator: the total number of live births in the area or population over the period of time.

DATA SOURCE(S)

- Numerator data: from operating room log books in all facilities in the area which perform cesarean sections.
- Denominator data: from vital registration if complete; otherwise, estimates of demographic parameters such as fertility rate or birth rate for the area with the appropriate population estimate, e.g., women of reproductive age, total population, can be used. Alternatively, most large household, demographic or health surveys collect data on cesarean delivery.

Prepared by C. Berg, Centers for Disease Control and Prevention.

Birth rates or fertility rates count live births only. Some cesarean sections are done in pregnancies which result in a stillbirth; however, even in developing countries with very high perinatal mortality rates, the percentage of deliveries after 28 weeks ending in a stillbirth is low. Thus, the use of live births should be acceptable as the denominator for this indicator.

PURPOSE AND ISSUES

Cesarean section, one of the essential obstetrical functions (EOF), is a life saving procedure. Its appropriate use leads to a decrease in maternal mortality and morbidity, as well as decreasing perinatal morbidity and mortality. Cesarean section as a proportion of all births reflects the availability, accessibility and utilization of maternal health services. This measure is complementary to indicators of the number of EOF facilities present and functioning in a given area.

While cesarean sections may be performed solely for the health of the fetus or newborn, in developing countries the vast majority will be done for maternal indications.

Causality: Many of the major pre- and intrapartum causes of maternal mortality and morbidity require the use of this procedure to save the woman's life or prevent serious morbidity. If the procedure is not used in appropriate cases, for whatever reason, maternal mortality will increase.

Feasibility: Cesarean sections can only be performed in facilities with surgical capacity. Of the EOF procedures recommended by WHO, data on the number of cesarean sections is probably the most reliably record-

ed at the facility level, as essentially all will be done in operating rooms, which keep logs of procedures. The defined and limited number of such facilities can be identified and the number of procedures ascertained.

Responsiveness: Changes in the ability of the health care system to provide cesarean delivery can have an immediate impact on this indicator, as can interventions to improve the accessibility or acceptability of the procedure/facility. Community education programs can also increase the number of women presenting who require the procedure. Because of its potential to respond to change from a variety of sources, this indicator can be collected as often as annually.

Population- or facility-based: Because reasonable estimates of the number of cesarean sections required in an unselected group of women are available which can provide target ranges for this indicator, the percent of deliveries done by cesarean section can be used on a population-basis. However, the percent of facility deliveries done by cesarean section will vary by the case-mix of the patients; it is not possible to specify an appropriate range of target percentages for cesarean sections in a facility. Using this indicator in a non-population based fashion can lead to significant bias depending on the referral patterns of women with complications needing the procedure.

Interpretation: The percent of deliveries by cesarean section should be interpreted in light of several factors, including minimum and maximum percentages, disaggregation of data and appropriate use of the technology.

A minimum level of 5 percent of deliveries by cesarean section has been suggested, based on estimates from a variety of sources. Rates less than 5 percent may indicate inadequate availability and/or access to obstetrical care especially if this rate occurs with less than 24 hour availability of surgical capability.

While 5 percent is considered a conservative minimum cesarean section rate, it is greater than rates currently found in many developing areas.

Maximum rates of around 15 percent, a level below that found in countries where the procedure is felt to be overused, have been suggested by some sources. Rates above this may suggest over-utilization for non-essential reasons. Such excess use unnecessarily exposes the woman to anesthesia and major surgery with its concomitant risks. It is also expensive and utilizes often scarce health care resources.

Increases in the percent of deliveries by cesarean section may be due to an increase in community awareness of the complications of pregnancy, services available, accessibility of services, the frequency of conditions leading to the need for cesarean section or changes in practice patterns in the health care system.

Decreasing rates may reflect better maternal health and nutrition, fewer obstetrical complications, improved non-surgical management of conditions or a decline in the availability of the services.

When assessing the percent of deliveries by cesarean section, it is important to consider the level of aggregation of data in terms of variables such as geography and social class. National levels may mask significant differences in rates between, for example, urban and rural areas. Likewise, rates in patients with different financial resources or types of insurance may vary widely.

The procedure of cesarean section usually occurs at the end of a complex series of events, possibly including pre-existing and pregnancy-specific medical factors, identification of complications, transportation to health care facilities and availability of necessary technology. When using this indicator, managers and scientists may also want to employ more in-depth techniques such as case audits to investigate what indicators are being used for cesarean section and if the appropriate women are receiving this service.

Indicator

PROPORTION OF WOMEN ATTENDED AT LEAST ONCE DURING PREGNANCY BY TRAINED PERSONNEL FOR REASONS RELATED TO THE PREGNANCY

DEFINITION

The proportion of pregnant women seen at least once during their pregnancy by a doctor or other persons with midwifery skills for reasons related to the pregnancy.

The indicator is calculated as:

$$\frac{\text{\# of pregnant women attended by trained personnel}}{\text{\# of live births}} \times 100$$

DATA REQUIREMENTS

- Numerator: counts of women who are seen by personnel trained for pregnancy-related care at some time during their pregnancy.
- Denominator: the most commonly used denominator for this indicator is the number of live births. Number of live births is a proxy for the number of pregnant women. This measure, however, underestimates the total number of pregnancies as it excludes those which end in stillbirth, spontaneous or induced abortion, ectopic and molar pregnancies.

DATA SOURCE(S)

- Numerator: Routine health service information.
- Denominator: Household survey data are probably the most reliable method of providing coverage information and for disaggregation of non-user characteristics.

Adapted from WHO, Indicators to Monitor Maternal Health Goals.

- Denominator: Census projections and vital statistics provide crude approximations

PURPOSE AND ISSUES

This indicator provides information on the level of utilization of care by pregnant women.

Although routine health service information is readily available, used on its own, it constitutes a poor source of statistics on coverage of care. These data fail to provide information on the total population in need of care. Applying a factor of 15% to the total number of live births should provide the approximate number of pregnant women in need of care.

The WHO defines "trained attendant" as the person who has successfully completed a prescribed course in midwifery and who is able to give the necessary supervision, care and advice to women during pregnancy, labor and the postpartum period, to conduct deliveries and to care for the newborn and the infant. This group does not include TBAs who have received less than six months training and who are not employed as primary health care workers in the formal system.

Although routine health service information supplies data for the numerator, it does not provide information on the total population in need of care. For example, it may not include pregnancies or births that take place outside

the health system--home deliveries or deliveries in private sector facilities. A crude determination of the number of live births can be made from census projections and vital statistics.

Causality: Because of the weak link of causality with maternal mortality, this indicator is of little use to program management especially when programs are strongly oriented towards saving women's lives rather than general health. It nonetheless is useful in the context of monitoring maternal mortality and morbidity.

Feasibility: This indicator can be employed at the local and district level as well as the national level.

Responsiveness: This indicator is responsive to change. For international comparisons, the situation should be reassessed every three years. However, countries may wish to reassess the situation annually for their own need. In any case, data collection should not be less frequent than every five years.

Population- or facility-based: Population-based.

Table 3: Antenatal care coverage in selected developing countries

Country and Year	% of births in which mothers received antenatal care from medically trained personnel
Kenya 1989	77
Nigeria 1991	60
Indonesia 1991	76
Pakistan 1990-1991	27
Bolivia 1989	45
Peru 1991-92	64
Egypt 1988-89	53
Morocco 1992	32

Source: B. Robey, S. Rutstein, L. Morris, and R. Blackburn, The reproductive revolution: new survey findings, *Population Reports*, Series M, Number 11, Baltimore, MD: The Johns Hopkins University, Population Information Program, December 1992: Table 16.

Indicator

PERCENTAGE OF WOMEN HAVING AN ANTENATAL CARE VISIT DURING THE LAST MONTH OF THEIR MOST RECENT PREGNANCY

DEFINITION

Percent of women giving birth in a given time frame who report having had at least one antenatal care visit during their last month of pregnancy

DATA REQUIREMENTS

Response to questions asked in surveys.

DATA SOURCE(S)

Community-based survey data of a random sample of women of reproductive age.

PURPOSE AND ISSUES

The purpose of this indicator is to measure the penetration of antenatal care services in a community, and the likelihood of women receiving antenatal care late in pregnancy when serious obstetric complications are most frequent. This indicator may reflect the perceived importance of antenatal care at an

individual and/or community level, and the availability and accessibility of services. The DHS surveys use a time period of three years, but other time periods could be considered. It is important to consider that a woman's ability to remember the timing of antenatal care visits during a pregnancy that happened years ago may be limited and unreliable.

Antenatal care visits in the last month of pregnancy decrease pregnancy-related morbidity and mortality by providing opportunities for the early recognition of complications and close monitoring of high risk women. This population-based indicator would be easy to obtain through household surveys. It would be responsive to programmatic intervention on both a short-term and a long-term basis. A high percentage of women with antenatal visits during the last month of pregnancy, or an increase in this percentage, would indicate improvement.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; M. Marshall, American College of Nurse-Midwives.

Indicator

PROPORTION OF BIRTHS ATTENDED BY TRAINED HEALTH PERSONNEL**DEFINITION**

The proportion of births attended by trained health personnel, excluding traditional birth attendants (TBAs). The indicator is calculated as:

$$\frac{\text{Number of births attended by trained personnel}}{\text{Number of live births}} \times 1.15$$

DATA REQUIREMENTS

- Numerator: Count of births in a specified community/region/country attended by trained personnel during a specified time period.
- Denominator: Count of all births or deliveries in a community/region/country during a specified time period. The inflation factor of 1.15 allows an approximation of the number of deliveries, as not all end in a live birth outcome.

DATA SOURCE(S)

- Numerator: Routine health service information.
- Denominator: Household survey data are probably the most reliable method of providing coverage information and for disaggregation on non-user characteristics.

PURPOSE AND ISSUES

This indicator is aimed both at maternal health, and to a limited extent, at maternal

mortality. Maternal mortality will be better addressed when the indicator stipulations are made more specific by excluding TBAs, whether trained or untrained, from the category of trained health personnel.

As with the preceding indicator, the WHO definition of trained health personnel is applied. WHO defines trained health personnel as persons who have successfully completed prescribed course(s) in midwifery and who are able to give the necessary supervision, care and advice to women during pregnancy, labor and the postpartum period, to conduct deliveries and to care for the newborn and the infant. If reduction in maternal mortality is the goal, trained health personnel require more than general midwifery skills for conducting normal delivery; they also need to know life-saving obstetric skills. They should be able to perform essential obstetric functions appropriate to their level in the health system. This group, therefore, does not include TBAs who have received less than six months training and who are not employed as primary health care workers in the formal system.

The indicator is a measure of the health system's potential to provide adequate coverage for deliveries and provides information on the actual coverage of assisted deliveries, both normal and complicated

In theory, all births (or deliveries) in a community should be included in the denominator. In practice, however, live births

Adapted from WHO, Indicators to Monitor Maternal Health Goals.

is the proxy. As a result coverage of delivery care may be overestimated as the denominator of live births underestimates the total number of pregnancies by excluding pregnancies that end in stillbirths, abortion, ectopic or molar pregnancies. Applying a correction factor of 15% to the total number of live births is suggested as one way of approximating the number of pregnant women in need of care.

Causality: This indicator has a strong relation-

ship with mortality, albeit still a weak one, compared to the previous indicator of antenatal care utilization.

Responsiveness: The indicator is responsive to change. As a result, programs may reassess it as often as each year. Otherwise, a three-year reassessment is recommended.

Population- or Facility-based: Population.

Table 4: Percentage of provider-assisted deliveries in selected developing countries.

Country and Year	% of deliveries assisted by a trained attendant*
Ghana 1988	64
Zimbabwe 1992	70
Sri Lanka 1987	87
Thailand 1987	65
Guatemala 1987	29
Mexico 1987	69
Jordan 1990	87
Tunisia 1988	69

* During the five years before the survey by a trained attendant (doctor, nurse or midwife)

Source: B. Robey, S. Rutstein, L. Morris, and R. Blackburn. (1992) The reproductive revolution: New survey findings. *Population Reports*, Series M, Number 11, Baltimore, MD: The Johns Hopkins University, Population Information Program. Table 16.

Indicator

PERCENTAGE OF WOMEN WHO HAD SYMPTOMS OF MAJOR OBSTETRIC COMPLICATIONS DURING THEIR MOST RECENT DELIVERY (ACCORDING TO THE PLACE OF DELIVERY)

DEFINITION

Percent of women delivering within a given time frame who report having had symptoms of: hemorrhage, sepsis, prolonged labor (> 12 hours of active labor), eclampsia (high blood pressure, severe swelling of the hands and feet, and/or seizures) around the time of their most recent birth, according to the place of delivery: home, health post, district hospital or essential obstetric service (EsOC) site, or other location.

DATA REQUIREMENTS

Response to question asked in surveys on symptoms of obstetric complications and place of delivery.

DATA SOURCE(S)

Community-based survey data of a random sample of women of reproductive age.

PURPOSE AND ISSUES

This is an indicator of the percent of women with symptoms of major obstetric complications by place of delivery. This indicator is designed to give an approximation of the frequency of significant obstetric complications and the distribution of delivery sites for these women in a given community/region. This is not an indicator of program success in reducing these complications, because intra-

partum complications are often not preventable. The ultimate purpose of this indicator is to delineate whether women with complications are delivering in a health facility where they and their infants will get appropriate and timely care. The usefulness of this indicator will depend on the accuracy of women's self-reporting of symptoms of obstetric complications compared with diagnosed complications, and their knowledge of the type of facility where they delivered (i.e. whether or not it was an EsOC site).

The indicator provides supplemental data on the percent of women in the community who report experiencing symptoms that should be assessed in an essential obstetric service facility. This indicator could be linked with facilities data from a community/region on the number of women admitted for intrapartum complications during the same time period. An increase in the proportion of women with obstetric complications delivering in EsOC facilities should decrease pregnancy-related morbidity and mortality. This population-based indicator could easily be obtained through household surveys and linked to admission data from regional health facilities. This information is not likely to change on a short-term basis, but would be useful in long-term planning for community education campaigns and monitoring the use of essential obstetric services.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

NUMBER OF FACILITIES PROVIDING ESSENTIAL OBSTETRIC FUNCTIONS (EOF) PER 500,000 POPULATION

DEFINITION

The number of functioning facilities, that is facilities that provide at least one of the following elements of obstetric care in the six months prior to the time of data collection.

Standards for EOF at the health center level include, at minimum, provision of: parenteral antibiotics; parenteral oxytocic drugs; parenteral sedatives for eclampsia; manual removal of placenta; manual removal of retained products. At the district hospital level, the services should include those listed above plus: anesthesia, surgery and blood transfusion.

DATA REQUIREMENTS

Count of number of facilities that meet the basic requirement in a population of 500,000 for a specified time period.

DATA SOURCE(S)

- Routine health service statistics: maternity registers.
- Health facility surveys.

Adapted from WHO, Indicators to Monitor Maternal Health Goals.

PURPOSE AND ISSUES

This indicator is aimed at measuring progress towards the reduction of maternal mortality and morbidity. It would facilitate the management of programs at the subnational and national levels. However, as reliance on national summary measures may hide important subnational disparities, disaggregation of data by geographic (urban/rural) and administrative (type of facility) divisions is recommended. This indicator should be used with caution on the international level, however. An absence of information on population density and accessibility to health services (in terms of travel time, distance, service fees) for each country or region makes comparison difficult.

Purpose: This indicator measures the extent of the availability of health services providing essential obstetric care.

Causality: There is a causal link between this indicator and maternal mortality. It is anticipated that an adequate supply of EOF facilities is important to save mothers' lives.

Section B

POLICY, OPERATIONS, COMMUNITY-LEVEL OUTPUTS

- Number of public statements made by leaders stating the importance of safe pregnancy
- Existence of a functioning national safe pregnancy committee
- Existence and implementation of a safe pregnancy strategic or operational plan
- Percentage of national health budget allocated/expended on safe pregnancy services
- Absence of unwarranted restrictions on providers
- Alarm and transport systems in place
- Percentage of all adults knowledgeable about maternal complications of pregnancy and childbirth
- Percentage of all adults knowledgeable about neonatal complications
- Percentage of all adults with knowledge of the location of essential obstetric services
- Percentage of women of reproductive age with knowledge of the location of essential obstetric services, and intent to use these services if needed
- Percentage of women of reproductive age who are able to autonomously seek essential obstetric functions during their pregnancy, childbirth, and newborn period
- Percentage of women who identify significant community-level barriers to seeking antenatal, delivery and/or postpartum care

Indicator

NUMBER OF PUBLIC STATEMENTS MADE BY LEADERS STATING THE IMPORTANCE OF SAFE PREGNANCY

DEFINITION

This indicator includes two specific elements: political commitment to address the problem of ensuring safe pregnancy services, and political commitment to the availability and accessibility of safe pregnancy services.

"Statements" may be delivered in *public* speeches or appear in written form in official communications, for example, national development plans, national position papers). Public means that the statement is addressed to an external audience, as opposed to an internal audience that would include personnel working on Safe Pregnancy or Maternal Care. More, a conversation with an international donor might be considered to be a public statement provided that a transcript or tape recording of the meeting existed which could be made available for the press and other interested parties. "Leaders" refers primarily to high-level government officials who are responsible for governing the country, establishing its laws, and allocating its public funds. Examples of government leaders whose statements would be assessed include the Prime Minister, the President, the Minister of Planning, the Minister of Health, the leader of the Congress or Parliament. Leaders may also include religious or medical figures who both speak with authority on the subject of Safe Pregnancy and who are recognized as leaders in social change or public welfare. The number of statements should be tallied over a specific reference period, for example, in the last calendar year.

DATA SOURCE(S)

Transcripts of speeches, quotations from speeches or statements reported in popular press or official press releases, national plans or other official documents intended for public consumption.

PURPOSE AND ISSUES

Political commitment to Safe Pregnancy is difficult to measure. This indicator will provide a crude indication of public expressions of high-level support for Safe Pregnancy but will need to be complemented by a qualitative interpretation. As discussed in the *Purpose and Issues* section of the Family Planning Policy Indicator, *Number of Statements of Leaders in Support of Family Planning*, this indicator is difficult to quantify and to interpret (Bertrand, et al., 1994). Notwithstanding its limitations, the indicator may be useful in signaling an impending change in the government's position on safe pregnancy.

Causality: The policy environment is responsible for creating a favorable background milieu for safe pregnancy programs in which to operate. Thus, it is difficult to assess direct causality to pregnancy related morbidity and mortality. However, a favorable policy environment for family planning has appeared as a significant contributory factor in reducing fertility. A public statement by a high level official may produce a number of different kinds of effects. It may encourage policymakers within the Ministry of Health to give

safe pregnancy greater attention in their programs, stimulate similar pronouncements by local and other leaders that may motivate local program managers and service providers to pay greater attention to safe pregnancy. A public statement by a high-ranking member of Congress or the legislature may result in more budgetary allocations for safe preg-

nancy services.

Feasibility: The indicator can be easily obtained from the above mentioned data sources.

Interpretation: Higher values would indicate positive outcome.

Indicator

EXISTENCE OF A FUNCTIONING NATIONAL SAFE PREGNANCY COMMITTEE**DEFINITION**

This indicator measures the political commitment to Safe Pregnancy. Each of the terms used in this indicator needs to be defined. A National Safe Pregnancy Committee may be either an interministerial body or a body that has been specially defined within a particular Ministry. A high-level committee composed of policy makers from ministries involved in defining Safe Pregnancy policy and implementation should exist. Its membership should also include representatives of other organizations such as professional associations, advocacy groups or women's health advocates concerned with safe pregnancy. A technical sub-committee with responsibility for identifying research needs, conducting research, developing technical documents and service delivery protocols for Safe Pregnancy policy and programs should exist to assist this committee, and for this activity, the sub-committee should consult with experts from respected research institutions.

Existence of a Committee refers to the law, decree or other order creating the body and describing its purpose, composition, and the terms of its function (frequency of meeting, reporting requirements, duration, sources of financing, etc). The Committee should have an official mandate.

The principal objective of the Committee should concern the promotion of a national safe pregnancy program, defined in terms consistent with the WHO. While the Committee may not be exclusively addressing Safe Pregnancy, Safe Pregnancy must be its pri-

mary area of emphasis.

Functioning means that the Committee meets regularly (for example, met within the last six months), has the active participation of (the majority of designated) representatives, and uses its meetings to further National Safe Pregnancy objectives.

DATA SOURCE(S)

- Charter, law, decree or other official document authorizing the creation of the Committee.
- Minutes of meetings, names of meeting participants.

PURPOSE AND ISSUES

One measure of political commitment to Safe Pregnancy is the institutional support and placement that it is given in the government. The example of a Safe Pregnancy Committee provided here is one kind of institutional support for policy formulation and implementation. However, at this time no "blueprint" organization exists; therefore, this indicator must be customized to each country's unique context.

Existence of a functioning Committee may or may not mean that the Committee has direct budgetary authority. Interministerial Committees typically are responsible for coordination of policy formulation and policy implementation, which can be a source of indirect bud-

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getary authority. In some cases, for example where external assistance is a primary source of Safe Pregnancy program support, the Committee may have direct budgetary authority. It is not clear whether one model is superior over the other; both have their own advantages and limitations. Externally supported committees gain their status from outside and may be less institutionally sustainable. Committees without direct budgetary authority may be stymied in program implementation because they have no resources that they can directly program. However, coordination, which implies management of information, has been shown to be effective in advancing program implementation.

Because Safe Pregnancy is a new initiative, there are few examples of such Committees. As Safe Pregnancy becomes an increasing priority, the number of models of institutional support for policy formulation and implementation will also grow. Very likely,

discussion of this indicator will need to be reviewed within the next two to three years.

Causality: The nature of this indicator is similar to the one mentioned above and has similar limitations in establishing causality.

Feasibility: The indicator can be easily obtained from the above mentioned data sources.

Interpretation/Measurement: Existence of a functional National Safe Pregnancy Committee would indicate a positive outcome. However, as mentioned above, there may be several instances where committees are formed but they have no budgetary authority. The interpretation of this indicator must be relevant to the context (each country may have a different blueprint for such committees) and be supplemented by the study of additional policy indicators to assess the true commitment to safe pregnancy programs.

Indicator

EXISTENCE AND IMPLEMENTATION OF A SAFE PREGNANCY STRATEGIC OR OPERATIONAL PLAN

DEFINITION

This is a qualitative (yes/no) indicator. It has two parts: existence of a plan and its implementation.

A. Existence of a safe pregnancy strategic or operational plan: A "yes" value is assigned if there exists a strategic or implementation plan which: (1) defines the objectives of the country's safe pregnancy program; (2) defines a clear strategy for attaining these objectives; (3) establishes an organizational structure for the program which is consistent with the strategy; covering both public and private sectors, including women's groups; and (4) estimates and projects the resources required to implement the strategy, and a specification of how these resources are to be secured. (N.B. It is quite possible safe pregnancy is addressed in a safe motherhood or women's health implementation plan. However, the safe motherhood or women's health plan should still be assessed to determine if the plan's objectives and corresponding strategies for safe pregnancy address criteria 1-4.)

B. Actual implementation of the strategic or operational plan: A "yes" value is assigned if (1) sufficient resources are available to support activities; and (2) activities are being conducted on schedule.

DATA REQUIREMENTS

An approved five-year or 10-year plan for safe pregnancy or safe motherhood or women's health. However, this plan should

be one that is being implemented. Interim performance indicators that may be specified in the plan or compiled by the MOH or another agency could be used to assess whether the plan is being implemented. Interviews with key informants at the central MOH and with local health centers can also tell us if such a plan is being implemented.

DATA SOURCE(S)

The government organization designated as responsible for coordinating safe motherhood or safe pregnancy. Agency reports and budget/financial reports supplemented by field visits.

PURPOSE AND ISSUES

This is a process indicator of an important activity in policy development since a policy statement would have minimal impact unless policy is translated into a strategic or implementation plan. Its purpose is to measure whether the safe motherhood or pregnancy program has developed a clear view of its mission and objectives and the strategies for attaining them. Strategic implementation planning at the national level requires the participation of various government ministries or departments, including the health, finance, planning, information, education, interior ministries, as well as important private groups (NGOs and commercial establishments), women's groups, religious and civic organizations. Because of the complexity of safe pregnancy

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issues, a strategic or implementation plan at the national level should ensure that the roles of these different agencies are well spelled out.

Causality: Same as applicable to other policy level indicators.

Feasibility: The information required can easily be collected from the data sources mentioned.

Interpretation/Measurement: This is a two-part indicator. The first part is measured in terms of yes/no for each the four criteria describing the basic elements of the strategic plan. One point is given for each criterion satisfied. The second part of the indicator is concerned with whether the plan is being implemented. Again, one point is scored for each criterion present. The 'yes' value may range from 0-2 based on the two measures of actual implementation specified.

Indicator

PERCENTAGE OF NATIONAL HEALTH BUDGET ALLOCATED/EXPENDED ON SAFE PREGNANCY SERVICES

DEFINITION

Percentage of the national health budget allocated/expended on safe pregnancy services for a given period.

The indicator is calculated for a given period/fiscal year as:

$$\frac{\text{Total allocation (or expenditure) on safe pregnancy services}}{\text{Total national health budget}} \times 100$$

DATA REQUIREMENTS

Information on amounts allocated or expended for a given period/fiscal year on total health services and on safe pregnancy services.

DATA SOURCE(S)

Health budgets; national accounts data on health budgets and recurrent expenditures; and surveys on time and resource use.

PURPOSE AND ISSUES

This input indicator may be used as a measure of the commitment of the national government to providing safe pregnancy services. Trend data on government allocation to (or expenditures on) health relative to other sectors will reveal the level of public commitment to health care overall; but trend data on government allocation/expenditures for safe pregnancy services reveal specific commitment to reproductive health. Ideally

there should be a national safe pregnancy strategic or operational plan (see indicator, "Existence and implementation of a safe pregnancy strategic or operational plan"), and the allocation/expenditure amounts for each element in the plan would be identified.

The proportionate spending of public health resources on safe pregnancy care can also be tracked at the local (district) level. There has been a tendency to centralize safe pregnancy service delivery; but to improve reproductive health, governments will need to shift resources from centralized, tertiary-care facilities to health services at the local level. While the definition of "local" may vary across countries--often defined at the facility or polyclinic level--it should be at whatever the appropriate level is for emergency obstetric care. The annual expenditures on safe pregnancy services at the local relative to central (tertiary care) level should then increase over time.

An observed decline in level of investment in safe pregnancy programs or services, or health in general, may not necessarily reflect a lack of national commitment to such. On occasion a decline may be related to conditionalities placed by external lending agencies on social sector investment. The indicator can be used as a measure of government achievement of the goals of the UN 20/20 initiative (UNICEF, 1994).

Because safe pregnancy services are integrated with other MCH/RH services, it

may be difficult to identify line items that are

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linked directly to safe pregnancy services. A supplementary approach is to interview supervisors and health care providers, asking them to estimate the amount of time spent providing safe pregnancy services relative to

their other service tasks. These estimates can be used to apportion labor and other joint costs.

Population- or facility-based: The indicator can be either facility- or program-based.

Indicator

ABSENCE OF UNWARRANTED RESTRICTIONS ON PROVIDERS

DEFINITION

This indicator may have a maximum of five points. One point is given for each of the following conditions: (1) appropriately trained and qualified midwives are allowed to perform manual removal of placenta; (2) administer parenteral medication (pitocin, antibiotics, methergine, intravenous transfusions and blood transfusions); (3) resuscitate the baby; (4) nurses are allowed to administer antibiotics and other parenteral medication; and (5) trained traditional birth attendants (TBAs) are encouraged by hospitals when they come in with referrals (TBA-friendly physicians and hospitals).

DATA REQUIREMENTS

Medical regulations

DATA SOURCE(S)

Ministry of Health service delivery guidelines, legal codes, provider surveys

PURPOSE AND ISSUES

This output indicator measures the extent to which operational policies impose restrictions on providers of safe pregnancy services. True access to safe pregnancy services may be limited unless we allow for more women to be reached by trained providers closer to their homes. An estimated fifty percent of maternal and newborn complications can be managed at home or at a health center level by a trained midwife who is allowed to resus-

citate the baby and stop a hemorrhage. The rationale for these restrictions on front-line providers may be couched in technical terms; however, these restrictions are a policy matter to the extent that their existence reflects underlying political forces. Additionally, decisions to remove such restrictions may require support from high-level decision makers.

The indicator is defined on the basis of most commonly encountered restrictions in many countries. The list may need to be altered somewhat in individual country settings. In some instances, restrictions may be on the books but not adhered to strictly in practice. Interviewing providers may yield valuable information as to which of these restrictions have the greatest impact on current practices.

Causality: Couched under the guise of a medical rationale, the services midwives and other outreach providers can offer are often restricted. Expanded role of the frontline providers in safe pregnancy services can be life saving for the mother and the infant.

Feasibility: The service delivery guidelines may be easily available but may not always reflect actual practices. Supplementation of information by provider surveys may be vital.

Interpretation/Measurement: The range of the indicator can lie between 0 to 5. Higher values are suggestive of a positive setting.

Prepared by B. Seligman, The Futures Group International.

Indicator

ALARM AND TRANSPORT SYSTEMS IN PLACE**DEFINITION**

EOF services have to be accessible in an emergency. Private arrangements might allow such access, but, in the many cases where these are insufficient, a dedicated alarm and transport system (A&T) may be needed. Such a system could reduce delays associated with reaching a referral site, increase the number of admissions to EOF, improve women's and newborns' condition on arrival, reduce EmOF case fatality rates, and eventually reduce maternal and perinatal mortality. We describe four interrelated indicators to measure the components of alarm and transport systems.

Alarm and transport systems can be evaluated from two perspectives. From the perspective of the individual woman, the relevant question is whether an effective system exists to transport her in a timely manner to an EOF facility in an emergency. Alternatively, from the perspective of a health ministry, the question is how to best allocate limited public resources to provide the best possible dedicated emergency transport system for obstetric and newborn emergencies.

From the woman's perspective:

- **Travel Time Required to Reach EOF**

The suggested measure to address whether women/newborns have access to an effective system of emergency transport is "time required to transport a woman/newborn with complications from the

emergency site to an EOF facility, measured from the onset of complications". This indicator would gauge both the travel time to the facility, as well as delays in seeking care (which can be caused by lack of recognition of the severity of the complication, slow family decision-making processes, and other factors).

For women, the indicator is often presented as the number (or percentage) of women who had pregnancy-related or obstetric emergencies who used A&T services cross-classified by travel time. For instance:

Table 5: Travel time required for transport to EOF facility

Travel Time	Number of Women
0-2 hours	100 (10%)
3-6 hours	300 (30%)
7-12 hours	300 (30%)
13-24 hours	100 (10%)
> 24 hours	200 (20%)
TOTAL	1,000 (100%)

Although this indicator is a good measure of the access to EOF services that is actually needed, it is data intensive and difficult to measure. The most common method of collecting the data is by asking a series of questions of the women (or their care-takers) or mothers of newborns at the time of admission or discharge from the EOF facility.

The procedure is highly biased in that it fails to enumerate women/newborns who died on the journey to the EOF facility or those who died in the village, or somehow survived serious complications, without attempting to reach the EOF. A second approach, asking women in a village how long it would take to reach a facility if an emergency were to occur, requires considerable speculation on the part of the respondents.

From a Health Systems Perspective:

We define a "dedicated A&T system" as an *institutionalized* system that allows the timely transfer of women with pregnancy-related or obstetric emergencies to an EOF facility. We are interested in gauging the extent to which governmental bodies or community leaders need to organize services for women/newborns in life-threatening circumstances. Such services could be sophisticated emergency ambulances, on the one hand, or the establishment of procedures to summon carriers for home-made stretchers, on the other. Relying upon haphazard private services, however, would not fit the criterion of a dedicated system. Public taxis, for instance, would be excluded because they are not dedicated to the emergency transport of women/newborns nor does their presence indicate that the community has made a concerted effort to ensure these services.

■ Need for a Dedicated A&T System

A dedicated A&T system is more needed the higher the number of potential emergencies and the more difficult it is, in the absence of such a dedicated system, to reach emergency facilities. The ideal indicator would be the absolute number of obstetric/newborn emergencies in which transport difficulties would exist in the absence of such a system. Because this would be quite difficult to determine, we recommend two types of simplification. First, instead of the absolute number of emergencies, use 15 percent of the number of pregnancies in a given year. Second, multiply this number by the percentage of all pregnancies (not necessarily emergencies) in which transport difficulties

are expected, using as somewhat arbitrary criteria (a) distance of more than one kilometer from an emergency facility, combined with (b) the absence of any private 24-hour point-to-point transport system, such as private taxis.

Need = Number of pregnancies x [0.10] x [proportion of pregnant women living farther than 1 km. from an emergency facility] x [proportion of the population not in reach of a point-to-point transport system]

This indicator is of use mainly to compare communities in regard to need. Clearly, a high value can be reduced in three ways: by reducing the number of pregnancies, by increasing the density of facilities, or by improving private transportation. If these measures are insufficient to produce a low value, one would then need to consider a dedicated A&T system. A low value of the indicator could also indicate a community better served than others, requiring less urgent attention or even able to tolerate some cutbacks.

The data required for the indicator are number of pregnancies (usually from a household survey), distance from emergency facilities (from a household survey with specific questions on this), and the presence or absence of private transport (from key informants).

As a possible alternative to this indicator, consider the "met need for emergency obstetric care," which indicates the proportion of estimated obstetric emergencies that are eventually treated in obstetric facilities. This indicator already takes into account any existing A&T system and therefore cannot suggest that it might be redundant. It therefore serves only part of the purpose of the need indicator.

■ The A&T Coverage Rate

The third indicator, the coverage rate, estimates the percentage of communities that have any alarm and transport system that is

dedicated to the emergency transport of women/newborns with life-threatening complications, classified by the community's need for such services. Classification by urban/ rural settings is also a useful distinction.

For instance,

Table 6: Coverage of dedicated alarm and transport systems

Availability of a Dedicated A&T System	Communities' Need for A&T Services		
	Yes	No	Total
Available	20	10	30
Not Available	60	10	70
Total	80	20	100

$$\text{Coverage Rate} = \frac{20 + 10 + 10}{100} \times 100 = 40\%$$

The numerator, a combination of the number of communities that both need and have an alarm and transport system available added to the number of communities that do not need A&T services, is secured from sample survey data. The need variable can also be generated by classifying the women from Table 1 above into community units and setting an appropriate standard. For instance, the criterion can be set that a particular community needs a dedicated alarm and transport system if at least 25 percent of the pregnant respondents in Table 1 were classified in the "need" category.

The denominator, the total number of communities in the catchment area can be estimated from governmental records (or from a census).

The range of this indicator is 0 (none of the communities have dedicated A&T systems and all pregnant women need services) to 100 (coverage of A&T system is complete).

■ Effectiveness of Available A&T Systems

The effectiveness of an A&T system in an

emergency situation depends on numerous factors, including but not limited to the frequency of service, user cost, vehicle and driver availability, and sociocultural barriers to use (including decision-making processes, purdah, etc.).

While measurement of each of these components is valuable, calculation of these measures is data and time intensive. Furthermore, the relative importance of the components has yet to be systematically evaluated. Instead, we recommend use of a new indicator, the effectiveness score, to assess the availability and effectiveness of an A&T system during an obstetric emergency.

A sample survey question (or discussion with pregnant women or community leaders) should first address whether any type of transport system (cars, helicopters, boats, buses, bicycle rickshaws, horses, donkeys, hammock carriers) exists that could be used to transport women with emergency complications.

Thirteen key items can then be used to characterize and score components of the identified A&T systems. The following questions can be answered through the use of a sample survey of pregnant women (preferably) or by discussions with focus groups or community leaders. A community module addressing service availability is also useful. Specifically, one point should be registered for each affirmative answer to the following questions regarding aspects of a local A&T system:

Information for Composite Measure of Public Understanding of Emergencies:

1. Can pregnant women (or their care-takers) accurately list complications for which transfer should be made to an EOF facility? For newborns, mother or father might be most appropriate.
2. Can the woman decide by herself when an A&T system should be mobilized to bring her to an EOF facility?

3. Do pregnant women and mothers (their families, traditional birth attendants, etc.) know of the availability and how to use the alarm and transport services?

Alarm Efficiency:

4. Does a communications system exist to alert health professionals in an emergency within 30 minutes?

Efficiency of Transport:

5. Is the A&T system fast enough so that a woman or newborn with life-threatening complications can reach the EOF within 12 hours of notification?

6. Is the A&T system fast enough so that a woman with emergency hemorrhage can reach the EOF within 2 hours of notification?

7. Can a newborn with asphyxia be brought to the hospital within 5 minutes?

8. Does the A&T staff know the location and the capabilities of EOF facilities in their area?

Availability of an A&T System:

9. Is the A&T system available 24 hours per day?

10. Is the A&T system available to all pregnant women and new mothers, regardless of caste, class, ability to pay, age, medical condition, and geographical location?

Quality and Cost of the System:

11. Is the transport system as safe as it could be given the conditions?

12. Are adequately trained staff and appropriate supplies available to stabilize the women during transport?

13. Are there adequate budgetary arrangements to cover the costs of the system?

The possible range for this indicator is 0 (no A&T system) to 12 (a highly-effective A&T

system). We subjectively divided the scale range into three levels of effectiveness, as follows:

Table 7: Alarm and transport effectiveness

Availability	Score
Strong	9-12
Moderate	5-8
Weak or None	0-4

As currently defined, the effectiveness indicator that we have suggested covers what appear to be the most important components of A&T systems. Context-specific decisions will still be required in the design of questionnaires to implement the proposed indicator. For instance, in addressing whether the A&T system is as safe as it could be in transporting women and newborns, questions to evaluate the accident record of A&T staff, the average speed at which the vehicle travels, the break-down record of the vehicles, would be appropriate in contexts where motorized A&T systems are available. In contexts where women or newborns are carried on a stretcher over mountainous terrain, however, the physical characteristics of the carriers and the quality of the stretcher are more important considerations. In all contexts, however, it is important to address whether safer arrangements could be made given the local context.

The indicators that have been suggested here cover the most important components of A&T systems. Since these components have received relatively little attention and limited scientific scrutiny, experience and research will be critical in determining whether the indicators are in fact operationally useful and how they can be improved.

Indicator

PERCENTAGE OF ALL ADULTS KNOWLEDGEABLE ABOUT MATERNAL COMPLICATIONS OF PREGNANCY AND CHILDBIRTH

DEFINITION

Percent of all adults who can identify four of seven warning signs of maternal complications of pregnancy and childbirth: antenatal vaginal bleeding, high fever, abdominal pain, swelling of hands and face, active labor for > 12 hours, placenta retained for more than one hour, and seizures.

DATA REQUIREMENTS

Response to questions asked in surveys.

DATA SOURCE(S)

Community-based survey of a random sample of adult men and women.

PURPOSE AND ISSUES

The purpose of this indicator is to provide baseline and monitoring information on the level of knowledge of the maternal complications of pregnancy and childbirth among

the adult population in a community/region/population. Consideration should be given to stratifying by age (or age groups) and sex of respondent. Knowledge of complications of pregnancy and childbirth is essential for appropriate and timely referral to essential obstetric and newborn services.

The indicator could be used to plan and monitor community information, education, and communication (IEC) efforts. Knowledge of the warning signs of complications of pregnancy and childbirth should decrease pregnancy-related morbidity and mortality by increasing rates of early recognition of complications and increasing the likelihood of prompt referral and service use. This population-based indicator could easily be obtained through household surveys and would be responsive to programmatic interventions on a short-term basis. A high value for this indicator or an increase in the value would indicate improvement in community knowledge of these warning signs.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Indicator

PERCENTAGE OF ALL ADULTS KNOWLEDGEABLE ABOUT NEONATAL COMPLICATIONS

DEFINITION

Percent of all adults who can identify four of six warning signs of neonatal problems after birth: "Blue baby", high or low temperature, inability to suck, extreme irritability or lethargy, difficult or very rapid breathing, weak or abnormal cry.

region/population. Consideration should be given to stratifying by age (or age groups) and sex of the respondent. Knowledge of signs of neonatal problems after birth is essential for appropriate and timely referral for appropriate health services.

DATA REQUIREMENTS

Response to questions asked in surveys.

DATA SOURCE(S)

Community-based survey of a random sample of adult men and women.

PURPOSE AND ISSUES

The purpose of this indicator is to provide baseline and monitoring information on the level of knowledge of neonatal problems among the adult population in a community/

This indicator could be used to plan and monitor community IEC efforts. Knowledge of signs of neonatal problems should decrease neonatal morbidity and mortality by increasing rates of early problem recognition and increasing the likelihood of prompt referral and service use. This population-based indicator could easily be obtained through household surveys and would be responsive to programmatic interventions on a short-term basis. A high value for this indicator, or an increase in the value, would indicate improvement in community knowledge of these warning signs.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Indicator

PERCENTAGE OF ALL ADULTS WITH KNOWLEDGE OF THE LOCATION OF ESSENTIAL OBSTETRIC SERVICES

DEFINITION

Percent of all adults surveyed who can identify where to go for essential obstetric services when questioned: "If you were/or a woman you know was in labor for three days and could not deliver the baby, where would you/she be able to go for an operation for delivery?"

DATA REQUIREMENTS

Response to questions asked during surveys.

DATA SOURCE(S)

Community-based survey of a random sample of adult men and women.

PURPOSE AND ISSUES

The indicator is a measure of the surveyed adults' knowledge of the location of emergency obstetric services. The purpose of this indicator is to provide information on com-

munity awareness of the location of essential obstetric services. It would be helpful in planning and publicizing services and for community education programs. Consideration should be given to stratifying by location (urban vs. rural household), age (or age group), and sex of respondent. In emergency obstetric situations, prior knowledge of service locations is vital so that prompt, appropriate care can be sought.

Knowledge of the location of services should decrease pregnancy-related morbidity and mortality by increasing the likelihood of prompt care-seeking behavior. This population-based indicator could easily be obtained through household surveys and would be very responsive to programmatic intervention on a short-term basis. A high percent of knowledge or an increase in the percent of knowledge, would indicate improvement in community awareness of the location(s) of emergency obstetric services.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Indicator

PERCENTAGE OF WOMEN OF REPRODUCTIVE AGE WITH KNOWLEDGE OF THE LOCATION OF ESSENTIAL OBSTETRIC SERVICES, AND INTENT TO USE THESE SERVICES IF NEEDED

DEFINITION

Percent of women of reproductive age surveyed with:

- Knowledge of the location of essential obstetric services when questioned: "If you were in labor for 3 days and could not deliver the baby, where would you be able to go for an operation for delivery?"
- Intent to use these services, when questioned: "Would you go to that facility if you needed an operation for delivery?"

DATA REQUIREMENTS

Response to questions asked in surveys.

DATA SOURCE(S)

Community-based survey of a random sample of women of reproductive age.

PURPOSE AND ISSUES

This provides data on the level of knowledge of the location of essential obstetric services and the intent to use these services if needed among women of reproductive age in a community/region/population. Information on women's knowledge of service location is also collected in the indicator described previously for all adults. If data are collected for that indicator, they can be stratified by sex to provide the first indicator listed here. Consideration should be given to stratifying by location, age and parity of respondents.

This indicator would be useful for planning and evaluating community information, education, and communication campaigns. Knowledge of the service location, along with knowledge of when they should be used, can decrease pregnancy-related morbidity and mortality by increasing the likelihood that services will be used. This population-based indicator could be obtained through household surveys and would be responsive to programmatic intervention on a short-term basis.

In addition, the question of intent to use services may provide useful information on under-use or misuse of essential obstetric services. The purpose of this would guide efforts towards evaluating and improving quality of care and access at a given facility. Often women know where to go for essential obstetric services, but will not go because of poor perceived quality of care, transportation or financial difficulties, language and cultural barriers, and many other reasons. The percent of women who would intend to use essential obstetric services if necessary would address this issue. This could be used to design programs to address under-use and misuse of essential obstetric service sites and to monitor long-term changes. This population-based indicator would also be easy to obtain through household surveys, although it may be more difficult to validate and more distantly affected by program outputs than other indicators. A high percent of knowledge and intent to use, or an improvement in these percentages, would indicate improvement.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Indicator

PERCENTAGE OF WOMEN OF REPRODUCTIVE AGE WHO ARE ABLE TO AUTONOMOUSLY SEEK ESSENTIAL OBSTETRIC FUNCTIONS DURING THEIR PREGNANCY, CHILDBIRTH, AND NEWBORN PERIOD

DEFINITION

Percent of all women of reproductive age who state that they would be able to make their own decision to seek essential obstetric care during pregnancy and childbirth if they felt care was needed.

DATA REQUIREMENTS

- Response to questions asked during focus groups. May want to ask hypothetical questions to focus the discussion and encourage spontaneous answers.

For nulliparous women, ask:

- If you were pregnant and needed to seek essential/newborn care during pregnancy or childbirth, is there anyone whose approval you would have to obtain before seeking care? YES or NO?
- If YES, whose approval would you have to seek?

For previously pregnant women, ask:

- During your last pregnancy, if you needed to seek essential care during pregnancy or childbirth, is there anyone whose approval you would have to obtain before

seeking care? YES or NO?

- If YES, whose approval did you have to seek?

DATA SOURCE(S)

Focus groups of women of reproductive age in a community.

PURPOSE AND ISSUES

This experimental indicator is a measure of a woman's autonomy as it relates to access to essential obstetric functions from her perspective. This indicator would reflect social norms concerning a woman's autonomy and decision-making capacity in her household. A focus group format for data collection is suggested because discussion between women is likely to enrich the information and clarify community education and intervention programs that affect the larger sociocultural sphere (e.g. those addressing issues of women's empowerment and household dynamics). This background indicator of health care seeking behavior may be more difficult to accurately measure and validate and may be more distantly affected by program outputs than other indicators.

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Indicator

PERCENTAGE OF WOMEN WHO IDENTIFY SIGNIFICANT COMMUNITY-LEVEL BARRIERS TO SEEKING ANTENATAL, DELIVERY, AND/OR POSTPARTUM CARE

DEFINITION

Percent of women of reproductive age who state they would be limited in seeking health care during pregnancy, delivery and postpartum by significant community level barriers.

(antenatal, delivery, or postpartum care?
YES or NO?

- If YES, what reason(s)?

DATA REQUIREMENTS

- Response to questions asked during focus groups. May want to ask hypothetical questions to focus the discussions and encourage spontaneous answers.

DATA SOURCE(S)

Focus groups of women of reproductive age in a community.

PURPOSE AND ISSUES

This experimental indicator is a measure of barriers to essential obstetric functions from women's perspective. This indicator would reflect social norms concerning household and community level barriers to essential obstetric functions. A focus group format for data collection is suggested because discussion between women is likely to enrich the information and clarify community level barriers. It would be helpful in designing community education and intervention programs that affect the larger sociocultural sphere (e.g. those addressing issues of women's empowerment and household dynamics) and in modifying existing barriers to services (e.g. distance and cost factors). This background indicator of community level barriers to essential obstetric functions may be more difficult to accurately measure and validate and may be more distantly affected by program outputs than other indicators.

For nulliparous women, ask:

- If you were pregnant and needed to seek care during pregnancy, childbirth and newborn period, is there any reason you would not be able to get care (antenatal, delivery, postpartum care)? YES or NO?
- If YES, what reason(s)?
 - cost of care
 - distance from health center/EOF site
 - perceived poor quality of care at health center
 - transportation difficulties
 - cultural barriers (language, religious restriction, etc)
 - other reason(s).

For previously pregnant women, ask:

- During your last pregnancy, was there any reason you were not able to get care

Prepared by M. Carlough, INTRAH; K. Stewart, Macro International; and M. Marshall, American College of Nurse-Midwives.

Chapter III

Newborn Health

- Section A: Outcomes and Outputs

Section A

OUTCOMES AND OUTPUTS

- Perinatal mortality rate (PMR)
- Percentage of perinatal deaths contributed by stillbirth and early neonatal death
- Cry of baby after birth
- Ratio of fresh to macerated stillbirths
- Birthweight specific proportionate perinatal mortality rate (BWPMR)
- Birthweight specific mortality rate (BWSMR)
- Experimental outcome indicators: a comment
- Exclusive breastfeeding rate (EBR)
- Percentage of pregnant women with at least 2 doses of tetanus toxoid immunization
- Safe birth kit coverage
- Eye prophylaxis coverage

Indicator

PERINATAL MORTALITY RATE (PMR)**DEFINITION**

Number of perinatal deaths per 1000 total births. A *perinatal death* is the death of a fetus of 28 weeks or more of gestation or the death of a live newborn within the first 7 days of life. Total births include fetal deaths from 28 weeks gestation plus the number of live births, i.e., all births after 28 weeks of gestation. The perinatal mortality rate is calculated by:

$$\text{PMR} = \frac{\text{Number of perinatal deaths}}{\text{Total number of births}} \times 100$$

DATA REQUIREMENTS

- Number of perinatal deaths (stillbirths plus early neonatal deaths)
- Number of total births or estimated total births (a rough estimate can be obtained using live births or crude birth rate x population)

DATA SOURCE(S)

- Vital registration
- Community survey
- Hospital records
- Information from birth attendants

PURPOSE AND ISSUES

The perinatal mortality is an important impact

Prepared by Z. Huque and M. Koblinsky, MotherCare.

indicator which may be used at the national and global levels and at local level if the population is large enough. It directly reflects prenatal, intrapartum and neonatal care and therefore serves as a marker for maternal and child health service quality. It also reflects maternal health and nutritional status and the environment in which she lives. Decreasing rates over time are desirable. Increasing rates may reflect better reporting than the past or actual deterioration of the quality of service or its access.

Causality: Direct link with fetal/newborn deaths and a proxy for maternal complications, labor/delivery management and maternal death.

Feasibility: Stillbirths and early infant deaths may be difficult to identify as many pregnancy losses are not admitted at all and many infant deaths are not acknowledged until an infant reaches a certain age. Formative research is needed to structure questions to elicit information.

Responsiveness: The early neonatal component may quickly respond to interventions whereas the stillbirth component may decline more slowly. A yearly count of perinatal deaths and calculation of the PMR may be warranted given the size of the population and frequency of deaths.

Population or Facility-based: Both.

Table 8: Estimates of perinatal mortality rates, around 1983.

Region	Number of live births (million per year 1980- 1985)	Estimated perinatal mortality rate (per 1000 live births)	Calculated number of perinatal deaths (1000s per year)
Africa	22.5	81	1831
Northern	4.8	64	300
Western	8.3	94	773
Eastern	8.2	81	663
Middle	2.7	80	214
Southern	1.5	77	114
Asia	76.1	59	4489
Western	4.2	55	232
Southern	37.0	87	3204
South-East	12.8	52	666
East	23.7	20	465
America	16.7	44	730
Middle	3.7	45	127
Caribbean	0.9	46	40
Tropical South	7.1	69	493
Temperate South	1.1	23	25
North	4.2	13	56
Oceania	0.5	13	7
Europe	6.9	14	93
Eastern	1.9	15	28
Northern	1.1	10	10
Southern	2.0	18	35
Western	1.9	10	19
USSR	5.3	28	147
World	128.7	57	7298

Source: Weekly Epidemiological Record, #24, June 16, 1989. WHO.

Indicator

PERCENTAGE OF PERINATAL DEATHS CONTRIBUTED BY STILLBIRTH AND EARLY NEONATAL DEATH

DEFINITION

Prepared by Z. Huque and M. Koblinsky, MotherCare.

Fetal Death or Stillbirth (SB): Number of late fetal deaths (28 weeks of gestation or more)

Early Neonatal Deaths (END): Number of newborn deaths within the first seven days of life (first 168 hours postpartum)

Percent of perinatal deaths (SB + END) contributed by each of these two factors:

$$\text{Percent SB} = \frac{\text{SB}}{\text{SB} + \text{END}} \times 100$$

$$\text{Percent END} = \frac{\text{END}}{\text{SB} + \text{END}} \times 100$$

DATA REQUIREMENTS

Numbers of stillbirth and early neonatal deaths

DATA SOURCE(S)

- Vital registration
- Community survey
- Hospital records
- Verbal autopsy
- Information from birth attendant

PURPOSE AND ISSUES

Stillbirths reflect the maternal health and nutritional status prior to and during pregnancy,

environmental conditions and prenatal care. In many developing countries, stillbirths constitute 50% of perinatal mortality. As perinatal mortality declines, the proportion contributed by stillbirths may increase.

Early neonatal deaths reflect maternal health (nutrition, especially if the baby is low birth-weight), delivery care (dies within first 24-48 hours of life) and early newborn care (tetanus deaths may start appearing by day 3-4).

Late neonatal deaths are primarily a function of newborn care. Tetanus deaths may peak in the second week of life, coinciding with deaths caused by pneumonia, meningitis and sepsis. If these are acquired during or prior to birth, they may result in an earlier death.

Causality: Linked with newborn mortality.

Feasibility: May be difficult to collect age at death in a home delivery due to confusion around life at birth. Cry of baby may distinguish live births from stillbirths. Distinguishing early and late neonatal deaths presents another problem (whether before or after 7 days) and questions sensitive to local timing characteristics will be needed to probe timing of death of live born.

Responsiveness: LNDs are most amenable to interventions, followed by END and fetal deaths. A yearly calculation could reflect program implementation.

Population or Facility-based: Population-based.

Indicator

CRY OF BABY AFTER BIRTH

DEFINITION

A loud cry at birth or within 5 minutes.

DATA REQUIREMENTS

Data on whether the baby emitted a loud cry at or within 5 minutes of birth (yes/no).

DATA SOURCE(S)

- Information from mother
- Information from birth attendant
- Hospital records

Prepared by M. Koblinsky, MotherCare.

PURPOSE AND ISSUES

Loud and clear cry is used together with appearance, pulse, muscle tone and respiration of the baby to determine the Apgar score, a tool to assess the condition of the newborn. Cry at birth provides evidence of live birth. However, its absence is not a proof of stillbirth. Lack of loud cry would give a false high rate of fetal deaths especially among premature infants who do not cry vigorously. If the baby is not crying, breathing and voluntary muscular movement should be evaluated. Heartbeat is likely to be recorded in institutions.

Indicator

RATIO OF FRESH TO MACERATED STILLBIRTHS

DEFINITION

Ratio of the number of stillbirths that are fresh to macerated stillbirths.

DATA REQUIREMENTS

- Number of fetal deaths between 28 weeks of gestation to before delivery (stillbirths)
- Number of stillbirths that are fresh (death during labor/delivery)
- Number of stillbirths that are macerated (death before onset of labor)

DATA SOURCE(S)

- Information from birth attendants
- Hospital records - may indicate fetal viability on admission to facility
- Verbal autopsy

PURPOSE AND ISSUES

Stillbirths reflect maternal health and nutritional status and the environmental condition prior to and during pregnancy and the quality of care during pregnancy, labor, and delivery. The programmatic implication is that one could assess quality of care during labor and delivery by looking at the ratio of fresh to macerated stillbirths. Macerated stillbirths are common in situations where there is a high incidence of syphilis, chorioamnitis,

prolonged labor, antepartum hemorrhage and hypertensive diseases of pregnancy, and poor prenatal care. If such pertains, the ratio may be low. A ratio of 1.0 or greater implies that 50% of the stillbirths or more are due to poor management of labor and could be avoided by better training and supervision of the birth attendants and provision of comprehensive emergency obstetrical care.

Macerated stillbirths can be identified from fresh stillbirths by the following:

- Dark-blue colored baby (or may be red-brown after week of *in utero* death and olive-brown afterwards)
- Skin peeling off
- Overlapping of skull bones (this happens quite late)

Causality: Direct link with fetal death.

Feasibility: May be difficult to determine the condition of the fetus or even that there was a stillbirth where home delivery is common. Sensitive probing may be required.

Responsiveness: Could be rapid depending on causes of stillbirth and interventions -- yearly measurement.

Population or Facility-based: Facility-based more feasible, although this could lead to changes in the ratio due to referral bias.

Prepared by Z. Huque and M. Koblinsky, MotherCare.

Indicator

BIRTHWEIGHT SPECIFIC PROPORTIONATE PERINATAL MORTALITY RATE (BWPMR)**DEFINITION**

The number of perinatal deaths occurring in a given cell divided by the total number of events in the table, multiplied by 1000. It is the proportion of all deaths which occur in a given weight group in a specific time period (See Tables 9 and 10 in next indicator description).

DATA REQUIREMENTS

- Number of deaths by birthweight and age at death in a particular category or cell
- Total number of events in the total table

DATA SOURCE(S)

- Hospital records
- Perinatal audit
- Birth attendants

PURPOSE AND ISSUES

The BWPMR provides information as to

which group of interventions (newborn and prenatal, newborn and delivery, neonatal and child care) will reduce the overall mortality rate the most.

Causality: Linked with deaths.

Feasibility: Age of death and birthweight are important features that need to be collected well in order to distinguish the death events. Where most births take place in a facility, the proportions indicate interventions as per Table 9. Calculations will require reliable information on time of death and good estimates of birth weight--two measures for which reliability and usefulness have yet to be determined.

Responsiveness: Yearly basis.

Population or Facility-based: Facility-based. Note: If this indicator is to be applied at the population level, then experiment with a sample of newborn infants as the distribution will change slowly.

Prepared by Z. Huque and M. Koblinsky, MotherCare; adapted from B. McCarthy, CDC.

Indicator

BIRTHWEIGHT SPECIFIC MORTALITY RATE (BWSMR)

DEFINITION

The number of deaths in a given cell ($<2500\text{g}$; $\geq 2500\text{g}$) divided by the total number of events in the row of a particular cell, multiplied by 1000 (See Tables 9 and 10).

DATA REQUIREMENTS

- Number of deaths in a particular birthweight/age at death cell
- Total number of events in the row of a particular birthweight/age at death cell

DATA SOURCE(S)

- Birth attendants
- Hospital records
- Perinatal audits

PURPOSE AND ISSUES

Birthweight specific mortality rate (BWSMR) provides information whether the health care about delivery system has been performing optimally during a specified time period, and focuses interventions. Deaths of infants less than 2500g are less amenable to immediate interventions, and focus attention on the mother's health and nutritional status.

Causality: Death.

Feasibility: As previous indicator.

Responsiveness: Yearly basis.

Population or Facility-based: Facility (see note on BWPMR), although population-based would be ideal.

Table 9. Summary framework of perinatal health care needs based on condition of fetus (macrated vs. fresh), birth weight (BW), age at death (AOD) and the service care response required

FETAL DEATH		Macerated	Fresh
		Prenatal/Delivery Care	Delivery Care
NEONATAL DEATHS	Birth Weight (BW)	Age at Death (AOD)	
		Early Neonatal Death (END)	Late Neonatal Death (LND)
	$<2500\text{ grams}$	Newborn Care Prenatal Care	Newborn Care Infant Care
	$\geq 2500\text{ grams}$	Newborn	

Prepared by Z. Huque and M. Koblinsky, MotherCare; Adapted from B. McCarthy, CDC.

Table 10: Preventive and treatment response to perinatal/neonatal death by age and birth weight at death¹

DEATH	RESPONSE	
DEATH/CAUSES	PREVENTION	TREATMENT
1. Fetal Death Syphilis Chorioamnitis Prolonged/obstructed labor Medical complications - APH - HDP	<u>Macerated</u> Syphilis screening and treatment Anticipatory guidance re: prolonged/obstructed labor Screening for medical complications of pregnancy <u>Fresh</u> Anticipatory guidance re: prolonged/obstructed labor and avoidance of self medication to speed labor Good management of labor/delivery	
2. END < 2500 grams Preterm/LBW Asphyxia Sepsis (chorioamnionitis?)	Improve women's nutritional status - Anemia - Weight gain in pregnancy - prepregnancy weight Improve women's health status - Malaria - Syphilis Anticipatory guidance re: prolonged labor Diagnose maternal sepsis and treat intrapartum	Feed baby appropriately - early, exclusive breastfeeding Warm baby (Kangaroo?) If preterm (and can measure) watch for breathing difficulties. Refer?
3. END ≥ 2500 grams Asphyxia Birth injury Hypothermia Wantedness gender specific	Family planning Anticipatory guidance re: prolonged/obstructed labor	Improve C-section rates Train staff in management of prolonged/obstructed labor Warming Feed baby appropriately - early, exclusive breastfeeding
4. LND < 2500 grams Tetanus Sepsis ARI LBW/prematurity	Tetanus immunization of mother ■ Clean delivery Improve nutritional status of women - Anemia - Pregnancy weight gain - prepregnancy weight Improve women's health status - Malaria - Syphilis	Early, exclusive breastfeeding Warming Treatment of sepsis Treatment of ARI Treatment of tetanus
5. LND ≥ 2500 grams Tetanus Sepsis ARI	Tetanus immunization ■ Clean delivery	Early, exclusive breastfeeding Warming Treatment of sepsis, ARI, tetanus
*Useful to get gestational age, follow baby for weight gain; use to push towards contact with services.		

¹ Adapted by M. Koblinsky from B. McCarthy, CDC.

EXPERIMENTAL OUTCOME INDICATORS: A COMMENT

Three practical issues need to be tested to determine the feasibility of extending the community-based outcome indicators to include those now designated as facility-based. This is desirable as it could focus the programmatic response more clearly.

Can mothers distinguish between macerated and fresh stillbirth? If so, as some experts have indicated, then a fresh to macerated ratio can be a popula-

tion level indicator (not just facility-based).

How practical is the weighing of every newborn (particularly seriously ill infants)? How useful is weight of every newborn at home?

Can mothers accurately report time of death, distinguishing specifically between stillbirths and live births who may die within minutes or hours of birth?

Prepared by M. Koblinsky, MotherCare.

Indicator

EXCLUSIVE BREASTFEEDING RATE (EBR)**DEFINITION**

The percent of infants aged less than 6 months (0 to 182 days) who are being exclusively breastfed. An infant is considered to be exclusively breastfed if he/she receives only breastmilk with no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

Measurement

The Exclusive Breastfeeding Rate (EBR) is calculated as:

$$\frac{\text{\# of infants 0-6 months exclusively breastfed}}{\text{total \# of infants 0 - 6 months}} \times 100$$

Illustrative Computation

Among 335 living infants aged 0-3 months, in the previous 24 hours:

- 33 were not breastfed
- 56 received only breastmilk
- 12 received breastmilk with vitamin drops, but nothing else
- 59 received breastmilk with water, but nothing else
- 71 received breastmilk with water and fruit juice, but nothing else
- 25 received breastmilk with formula and fruit juice, but no solids
- 79 received breastmilk and solid foods

In this example, 68 children are exclusively breastfed (56+12), so the Exclusive Breastfeeding Rate is 20.3 percent (68/335 x 100).

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention

DATA REQUIREMENTS

- The number of living infants under the age of 6 months.
- 24-hour recall data of all liquids and solids consumed by living infants 0 - 6 months. Respondents should be probed about the different kinds of liquids the infant may have received, including water, juice, milk, formula, and other liquids.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

According to the Innocenti Declaration, all infants should be fed exclusively on breast milk from birth to 6 months. This recommendation implies that 100% of infants under the age of 6 months should be exclusively breastfed. This indicator is used to give an overall measure of the degree to which women have adopted behaviors consistent with this recommendation. The indicator is the same as that described at an informal WHO Working Group on infant feeding indicators.

The indicator gives equal weight to a reduction in the duration of exclusive breastfeeding and to a reduction in the percent of women who exclusively breastfeed. For example, a population in which three-quarters of infants are exclusively breastfed for four months and

one-quarter are never exclusively breastfed would have the same value on this indicator as would a population in which all infants are exclusively breastfed for three months.

The indicator should be interpreted as the percent of infants who "are currently being exclusively breastfed" rather than the percent who "have been exclusively breastfed since birth." The use of a 24-hour recall period may cause the indicator to overestimate the percent of infants who have never ingested anything except breastmilk since birth, since some infants who are given other liquids irregularly may not have received them in the 24 hours before the survey. If retrospective

data are collected to capture this data, **results are not comparable to 24-hour recall data.**

In some surveys, the number of births each month could vary considerably, perhaps due to survey methodology, sampling error or seasonality of births. Such variation could affect the calculation of the EBR. For example, if there are many more zero-month-olds than three-month-olds in the sample, the EBR will be biased upward since younger children are more likely to be exclusively breastfed. In this case, it might be useful to age-adjust the percent exclusively breastfed, assuming that the number of births each month is constant.

Indicator

PERCENTAGE OF PREGNANT WOMEN WITH AT LEAST 2 DOSES OF TETANUS TOXOID IMMUNIZATION

DEFINITION

The number of pregnant women who have received at least 2 doses of tetanus toxoid vaccine per 100 live births in a defined area during a defined time period.

$$\text{TT2 Coverage} = \frac{\text{\# of pregnant women with TT2} + \text{TT3} + \text{TT4} + \text{TT5}}{\text{\# of live births}} \times 100$$

This calculation is based on WHO guidelines (WHO, EPI Programme, 1993).

DATA REQUIREMENTS

- Number of pregnant women who have received at least 2 doses of TT in this pregnancy or 3 or more prior to this pregnancy.
- Number of live births.

DATA SOURCE(S)

- Routine health service report
- Coverage survey

Prepared by Z. Huque and M. Koblinsky, MotherCare.

PURPOSE AND ISSUES

This measures coverage of women with adequate tetanus toxoid to protect against neonatal tetanus. If late neonatal death rates are high irrespective of birth weight, neonatal tetanus could be a cause as tetanus deaths peak typically in week 2 of life.

A factor that needs to be considered while estimating the TT2 coverage is that women who have already received 3 doses of TT in the past 5 years are protected during the current pregnancy. While they may not receive any TT in the current pregnancy, such women should be included in the coverage. For those women who have not received tetanus toxoid previously, the 2nd dose must be received at/before 36 weeks to allow 2-4 weeks time to convey immunity to the newborn and particularly to the premature baby.

Causality: Linked with neonatal death.

Feasibility: Often included in EPI surveys.

Responsiveness: Yearly.

Population or Facility-based: Population.

Indicator

SAFE BIRTH KIT COVERAGE

DEFINITION

Percentage of pregnant women with a safe birth kit.

DATA REQUIREMENTS

- Number of pregnant women with a safe birth kit
- Number of pregnant women

DATA SOURCE(S)

- Community survey
- Supply stores

PURPOSE AND ISSUES

Purpose: To determine the coverage of preg-

Prepared by Z. Huque and M. Koblinsky, MotherCare.

nant women with a safe birth kit. A kit typically includes at least soap, a razor blade, cord ties, and a plastic sheet. Coverage with kits may indicate contact with the service system and individual focus on labor and delivery.

Causality: Kits may decrease newborn mortality from tetanus. With high TT coverage, the link between kits and sepsis will be stronger.

Feasibility: Women should be able to show kits; recall may be good.

Responsiveness: Yearly-basis.

Population or Facility-based: Population

Indicator

EYE PROPHYLAXIS COVERAGE**DEFINITION**

Percent of newborns with eye ointment (silver nitrate, tetracycline or erythromycin) available at birth per 100 live births in a defined area within a defined time period.

DATA REQUIREMENTS

- Number of live newborns with eye prophylaxis ointment/liquid available at birth
- Number of live newborns

DATA SOURCE(S)

- Community survey

- Birth attendants

PURPOSE AND ISSUES

Purpose: This indicator is useful in areas of high gonorrhea/chlamydia coverage.

Causality: Linked with neonatal/child morbidity.

Feasibility: Experimental.

Responsiveness: Yearly.

Population or Facility-based: Population.

Prepared by Z. Huque and M. Koblinsky, MotherCare.

Chapter IV

POST-ABORTION CARE

- Section A: Problem Outcomes
- Section B: Policy
- Section C: Training
- Section D: Counseling and Family Planning Services
- Section E: Access to Post-Abortion Care
- Section F: Technical Quality of Service Delivery
- Section G: Quality of Care: The Client-Provider Interaction
- Section H: Costs of Post-Abortion Care

PROBLEM OUTCOMES

- Abortion rate (AR) and total abortion rate (TAR)
- Abortion ratio
- Percentage of abortions resulting from contraceptive failure
- Abortion complication treatment rate
- Number and percentage of women suffering from abortion-related reproductive morbidities
- Proportion of maternal mortality attributed to abortion
- Facility case fatality rate (CFR)--post-abortion complications
- Total number of uterine evacuations performed for treatment of incomplete abortions
- Total number of admissions for abortion-related complications
- Proportion of abortion-related obstetric complications at service facilities
- Number or percentage of women who have presented for treatment of complications of abortion, by type of complication

Indicator

ABORTION RATE (AR) AND TOTAL ABORTION RATE (TAR)**DEFINITION**

The AR is the number of induced abortions occurring in a given year or other specified reference period per 1,000 female population of reproductive age (15-44 or 15-49). The TAR is the total number of abortions a woman will have in her lifetime if current levels persist. This lifetime risk is a cohort measure and can be calculated with period measures (age-specific abortion rates) or approximated by multiplying the abortion rate by the length of the reproductive period (30 or 35 years).

The AR is calculated as:

$$AR = (A/P) \times 1,000$$

$$A = \text{\# of abortions in a given year or reference period,}$$

$$P = \text{total mid-year or mid-period population of women 15-49}$$

The TAR is calculated as:

$$TAR = 35 \times AR$$

where:

$$35 = \text{number of years in the reproductive life span,}$$

$$AR = \text{abortion rate}$$

Illustrative Computation

Estimate of abortion rate and the total abortion rate in Cuba, 1988-89 (Henshaw, 1990)

$$\begin{aligned} AR &= (A/P) \times 1,000 \\ &= (155,300/2,680,884) \times 1,000 \\ &= 57.9 \end{aligned}$$

$$\begin{aligned} TAR &= 35 \times AR \\ &= 35 \times (57.9/1000) \\ &= 2.0 \end{aligned}$$

Prepared by Patricia Bailey, Family Health International.

DATA REQUIREMENTS

For the numerator of the abortion rate: the total number of abortions occurring in a given year or reference period. For the denominator: the enumerated or estimated mid-period population for the same period.

DATA SOURCE(S)

Abortions: where abortion laws are liberal, official statistics are likely to provide the most accurate numbers; where abortion is restricted data will be less accurate but estimates may be derived from surveys of providers, population-based surveys, hospital-based studies, or a combination of sources.

Population: usually obtained from census data or projections based on census data.

PURPOSE AND ISSUES

Rates and ratios are two of the most widely used abortion measures. They are indispensable statistics for documenting levels of abortions across time and space. The abortion rate is a useful tool in the evaluation of contraceptive services, either for the purpose of setting a baseline or for measuring progress. The abortion rate reflects contraceptive method and user effectiveness, as well as access to services. The rate is less useful to evaluate demonstration projects or the effects of separate program components.

The rate is affected by several forces: 1) the proportion of women who become pregnant in a year; 2) the likelihood that a pregnancy is

unwanted; and 3) the likelihood that an unwanted pregnancy will be terminated. Consequently, the abortion rate can be lowered by increasing effective contraceptive use, thus decreasing the number of unwanted pregnancies and potentially lowering fertility. On the other hand, if the number of pregnancies is constant, but more unwanted pregnancies are carried to term, the abortion rate will also decrease, with the effect of potentially increasing fertility.

Like the total fertility rate, the total abortion rate is easily understood, serving as an effective statistic for comparative purposes. The advantage of the TAR is that it takes into account the probability of becoming pregnant and the probability of terminating each pregnancy throughout the reproductive life cycle. Like the abortion rate, the TAR level indicates how widely and effectively contraceptive services are used.

Rates and ratios, however, are often seriously compromised by their accuracy. As stated above, where abortion is restricted, data are likely to be inaccurate. In these circumstances, data may require adjusting for underreporting, misclassification or socioeconomic conditions that reflect the safety of clandestine abortion and the likelihood that a woman with complications from an induced abortion seeks and receives treatment. Even where abortion is not restricted, as in the US, research has shown that women underreport their abortion experiences. Where judicial reprisal or severe physical or psychological damage is a possibility, accurate reporting is even less likely. For years, researchers have attempted different methods for collecting sensitive and personal information at little or no threat to the research subject. Recent efforts with the National Survey of Family Growth in the United States, include computer-assisted interviews, which maximize a respondent's privacy.

Indicator

ABORTION RATIO

DEFINITION

The abortion ratio is the estimated number of abortions per live birth or pregnancy in a given time period, usually a year. Sometimes 100 or 1000 live births is used as a constant. It is thus a ratio per birth or a risk per pregnancy. The abortion ratio should not be confused with the abortion rate.

The ratio is calculated as:

Ratio = (A/LBs)

A = number of abortions in a given year or reference period, and

LBs = number of live births occurring in the same reference period

Illustrative Computation

Estimate of abortion ratio in Russia, 1992

Ratio = A/LBs
 = $3,531,000 \text{ abortions} / 1,572,128 \text{ live births}$
 = 2.246

DATA REQUIREMENTS

For the numerator of the abortion ratio: the total number of abortions occurring in a given year or reference period. For the denominator: the total number of live births occurring in the same time period. This can be estimated from the size of the female population of reproductive age and the crude birth rate.

DATA SOURCE(S)

Abortions: where abortion laws are liberal,

official statistics will provide the most accurate numbers; where abortion is restricted, data will be less accurate, but estimates may be derived from surveys of providers, population-based surveys, and hospital-based studies. Often several sources may be used to provide a range of estimates.

Live births: vital statistics, population censuses, population-based surveys.

PURPOSE AND ISSUES

The abortion ratio is one of the most widely used measures of abortion. Like the rate, it is useful for making comparisons across time and space. Since the numerator of the ratio is the same as the rate, this measure shares the chronic problems of inaccuracy, underreporting, and misclassification.

The appropriate denominator for the abortion ratio is also a serious measurement issue. As a measure of risk, the ratio should reflect the probability that a given pregnancy will end in abortion. Thus the at-risk population would be the total number of pregnant women. All pregnancies would include live births, stillbirths, premature and term deliveries, induced and spontaneous abortions, ectopic and molar pregnancies. Nevertheless, this number is rarely available, especially in less developed countries. Even the number of live births may not be known in some countries and must be estimated. Live births are generally the preferred denominator as they are more readily accessible and less

Prepared by Patricia Bailey, Family Health International.

susceptible to under-reporting. Furthermore, researchers often choose live births for the sake of comparability with data from other countries. Another frequently used denominator is the sum of LBs and induced abortions. Besides the basic problem of counting live births, live births underestimate the total number of pregnancies by at least 10%, and that presumes a low incidence of induced abortion. When live births are used instead of pregnancies two potential

problems emerge that relate to the mis-match between population in the numerator and that in the denominator: 1) a small proportion of pregnancies give rise to multiple births; and 2) in addition to live births, pregnancy outcomes include stillbirths, spontaneous abortions, ectopic and molar pregnancies. The former overestimates the ratio by 1.1% while the latter underestimates the ratio by a larger, but unknown, amount.

Indicator

PERCENTAGE OF ABORTIONS RESULTING FROM CONTRACEPTIVE FAILURE

DEFINITION

International.

The percent of abortions performed within a program in which the woman was using a contraceptive method (or had begun using a method) but got pregnant despite use of the method. Included among these women are those who 1) were using a method correctly, but the method failed; 2) were using the method incorrectly.

Calculation

The number of women who report having conceived while using a method divided by the total number of women undergoing an induced abortion.

DATA REQUIREMENTS

Information on number of induced abortions performed within a program and the number of women who were using a method at the time of conception.

DATA SOURCE(S)

Self report of women undergoing spontaneous or induced abortion collected as part of clinic records or through surveys.

PURPOSE AND ISSUES

The purpose of using this indicator is to determine the extent to which the number of women undergoing abortion might be reduced by improvements in family planning services. An example of how this information might be useful would be the identification of methods

Prepared by Cindy Waszak, Family Health

associated with high failure rates due to misuse that would lead to improved counseling on method selection or compliance.

Women may cite contraceptive failure as a reason for seeking abortions because they are sometimes treated less punitively if providers believe they were acting “responsibly” by using contraception. This indicator may be most useful in circumstances in which women are using a long term, non user-dependent form of family planning (e.g. IUD, implant or injectables).

Whether the distinction between method failure and user failure needs to be made will depend on the ultimate use of the data. A method failure seems more likely to be assumed when the client is using a provider-dependent method such as hormonal implants, injections, IUDs or surgical sterilization, though there are programmatic implications for this information if failures result due to the inappropriate selection of a method for a particular client. For methods which depend on ongoing client behavior, the distinction is less clear. Clients may indeed be using the method incorrectly, but their incorrect use may result from improper counseling. Program evaluators should be careful not to present information on user failures in a way that blames the user for the failure.

Measurement of contraceptive failure depends on the self-report of women involved. There will be some distortion of

method even if they were not because they perceived that they would receive better treatment if they did so.

Another consideration when determining how to collect the data is the extent to which one wants data that are program-specific or population-specific. Interviews at intake for abortion services may provide the best methodology for program-based information, but some type of population-based survey would be more applicable for making a population-based determination.

memory the longer one waits to collect the data. Questions asked routinely as part of the intake interview and answers recorded on clinic records might be a more reliable source than survey data collected some time after the abortion. On the other hand it is important to be careful about retrospectively going back to obtain these data from clinic records if abortion clients were not questioned about their contraceptive use in a systematic way. Another problem with using data from clinic records is the possibility that some women may have reported using a

Indicator

ABORTION COMPLICATION TREATMENT RATE

DEFINITION

Among women having an induced abortion within the past twenty-four months who had a complication, the percent who sought medical treatment post-abortion.

This indicator is actually composed of two indicators:

- Among women having an induced abortion in the past 24 months, the percent who had a complication (acute problems such as incomplete uterine evacuation, hemorrhage, sepsis, infection or internal organ damage) post-abortion.

The numerator for this indicator is the number of women who had at least one complication post-abortion during the past 24 months. The denominator for this indicator is the number of women reporting having had an induced abortion within the past twenty-four months.

- Among women having an induced abortion within the past twenty-four months who had a complication, the percent who sought medical treatment post-abortion.

The numerator for this indicator is the number of women who had a complication post-abortion who actually received medical treatment from a health care facility or provider for that complication. The denominator is the

same as the numerator for the first indicator, that is, the number of women who had an abortion who had at least one complication post-abortion during the past twenty-four months.

DATA REQUIREMENTS

To calculate this indicator, the following data is needed for a representative sample of the population of interest:

- number of women having an induced abortion in the past 24 months;
- number of women having post-abortion complications in the past 24 months; and
- number of women having post-abortion complications in the past 24 months who received medical treatment.

DATA SOURCE(S)

Induced abortions are severely under-reported in standard cross-sectional household surveys. In addition, those women who do report induced abortions may not be representative of all women undergoing an abortion within the population. Therefore, it is difficult to identify an accurate data source. Currently, a modified data collection technique using both qualitative and quantitative methods to collect this type of data is being developed, but this would be on an experimental basis and is untested.

PURPOSE AND ISSUES

As reflected above, this indicator is trying to measure both the risk of having a complication post-abortion and the likelihood of obtaining treatment for complications that occur. It does not measure the number of abortions a woman has had. Limiting the period to the past twenty-four months may decrease the number of women experiencing repeat abortions within that time frame. Some of the factors affecting this indicator, then, might include changes in:

- pregnancy rate;
- family planning use;
- abortion rate: If the abortion rate decreases, the number of times a woman is exposed to the risk of complications would decrease. Also, her risk of complications per exposure may actually decrease if the risk of a complication increases the more abortions she has;
- abortion methods used (including intro-

duction of safe abortion services); and

- patterns of medical care utilization.

It is important to keep in mind that changes in any of these factors could result in either an increase or a decrease in the value of this indicator. For example, if services for treatment of post-abortion complications improve, and there are no other changes (including no change in the abortion and complication rates), the value of the indicator could increase. That is, women would be more likely to seek care for complications after learning about the improved services, so that a higher proportion of women with complications would be receiving treatment. This would, then, be a desired effect.

It is also important to look at both components of this indicator to assess its meaning. For example, if abortion methods improve, the complication rate may decrease. This would be an important change to note, though it may or may not affect the treatment rate indicator.

Indicator

NUMBER AND PERCENTAGE OF WOMEN SUFFERING FROM ABORTION-RELATED REPRODUCTIVE MORBIDITIES

DEFINITION

Abortion-related morbidities are, by and large, inherently clinical events. Because unsafe abortion can have a variety of untoward long term effects, there can also be a variety of problems with which affected women will present for care to clinic or hospital. Most prominent and measurable of these are infertility, complaints of chronic abdominal pain, and intrauterine scar tissue formation (with or without cervical stenosis).

Infertility is commonly defined as the inability to conceive during a period of two years, when no contraception has been used.

Chronic Abdominal Pain is a marker for chronic infection or the presence of intra-abdominal adhesions (as a result of septic abortion or uterine trauma). It can be defined as a complaint of abdominal pain by a client known to have experienced an abortion during her last pregnancy, unimproved by medical means (e.g., NSAIDs, antibiotics) requiring surgical investigation for diagnosis and cure.

Intrauterine Scar Tissue/Cervical Stenosis (Asherman's Syndrome). This uncommon entity is seen almost solely as the result of over vigorous curettage of the uterine cavity, especially if this takes place in a septic/infected environment. It is clinically suspected in a patient with a history of abortion (with some sort of uterine procedure) who complains of steadily decreasing menstrual flow and/or amenorrhea accompanied by cyclic cramping as if a menstrual period were

present. Hysteroscopic examination of the uterine cavity can be diagnostic. A D&C will often be diagnostic and is commonly therapeutic.

A number of other indicators could be considered in this category depending upon local conditions, the means by which unsafe abortion is performed, and the availability and quality of post-abortion care for complications.

DATA REQUIREMENTS

- Surgical case summaries indicating the pre-operative diagnosis, the procedure, and the post-operative diagnosis.
- Relevant questions asked on DHS surveys. Questions might include:
 - Have you ever seen a health professional because of infertility? since your last pregnancy?
 - Have you ever seen a health professional because of abdominal pain? since your last pregnancy?
 - Have you had any surgical procedures to evaluate the above problems?

DATA SOURCE(S)

Hospital Operating Room Logs - virtually all hospitals keep logs documenting the procedures performed in the operating theaters.

Prepared by Paul D. Blumenthal, Johns Hopkins University/JHPIEGO.

Resident Logs - such as those which most residents in Obstetrics and Gynecology are required to keep in order to fulfill their training requirements.

PURPOSE AND ISSUES

Indicators for **outcomes** are conceptualized as being accessed at the population level, through population-based data. However, when the indicators are contained almost entirely within the clinical domain, it may be necessary to combine the clinical pattern of disease with the knowledge of where the information relating to those indicators may best be discovered. The indicators described above may justifiably be viewed as outcomes which relate to the prevalence of unsafe abortion and its consequences. Most importantly, in clinical terms, these indicators commonly have surgical end-points which will bring the client to the attention of even the most primitive health information system.

Although few health information systems in the developing world can currently collect or, much less have access to, information about the surgical diagnoses and procedures being performed on a national level, these data **are** available at the hospital level and more precisely at the departmental level. Worldwide, operating room logs track the pre-op diagnoses and surgical procedures performed on a daily basis. Similarly, as a training requirement, residents keep track of, and submit to their departmental chair, the

diagnoses, procedures and outcomes of those procedures. If these data could be incorporated into a **departmental quality assurance plan** (as they are in the U.S. and other countries), the prevalence of certain procedures at certain centers could be ascertained. These "end-point" indicator procedures are associated with the incidence of unsafe abortion.

Of course, there are any number of causes for infertility and abdominal pain. But, assuming that unsafe abortion is a significant causative factor contributing to their incidence, a decrease in prevalence of the "marker" procedures ought to result from safer abortions. For instance, although there are a number of causes of renal failure, the association between acute cortical renal necrosis and septic abortion was once well known. Prior to the legalization of abortion, septic incomplete abortion was once the most common cause of acute renal failure in reproductive aged women. Today, it is virtually unheard of in this connection. Tracking these data at the national/regional level will require some sort of sampling, just as in a DHS survey. However, instead of sampling the population, it is the hospitals that will have to serve as the representative samples. Thus some sort of sentinel surveillance system will be required. As far as the DHS survey is concerned, by relating the obstetrical history to the answers to the questions described above, an association may become apparent.

Indicator

PROPORTION OF MATERNAL MORTALITY ATTRIBUTED TO ABORTION

DEFINITION

This indicator describes what proportion of maternal mortality is attributable to deaths due to complications of abortion.

It is calculated as:

$$\frac{\text{\# of deaths from abortion}}{\text{\# of all maternal deaths}}$$

where:

the number of deaths due to abortion come from a given time period

the number of maternal deaths come from the same time period

Illustrative Computation

$$142 / 262 = .542 \text{ (54.2\% of maternal deaths are due to abortion)}$$

DATA REQUIREMENTS

Data requirements are the same as those of the two mortality ratios: number of abortion related deaths occurring in a given period, the total number of maternal deaths, and number of live births during the reference period.

DATA SOURCE(S)

Population-based surveys, special surveys, vital registration statistics, health service statistics. Death certificate and maternal mortality audits are helpful for determining causes of death but not for estimating numbers.

PURPOSE AND ISSUES

The proportion of maternal deaths attributable to abortion is an indicator of progress in family planning use, the quality of abortion services as well as emergency medical services to treat complications of abortion. This measure is a useful indicator of the importance of abortion mortality relative to other maternal causes of death (or relative to other causes of death to women of reproductive age [WRA], if the denominator includes all deaths to WRA). A decrease in this proportion suggests that abortion services and/or treatment have become safer or that abortion is less frequent relative to other causes of death. The measure can indicate specific problems that occur at the time of services and/or treatment of complications.

This indicator is riddled with all the problems of the maternal mortality ratio (MMR). It is necessarily dependent on accurate numbers of deaths for all maternal causes and on accurate cause of death ascertainment for abortion causes. Unfortunately, the accuracy of these data is often questionable. The usual source of information on maternal deaths is hospital statistics, where less than half of the maternal deaths may occur, as was the case of a hospital-based pilot study in North Yemen (AbdulGhani, 1989).

In addition to the under-reporting of maternal deaths, there is also the problem of their misclassification. Deaths due to abortion are often misclassified as sepsis and hemorrhage.

Prepared by Patricia Bailey, Family Health International.

In countries where abortion is restricted, abortion-related deaths may be intentionally misreported in order to protect the women's family reputation or to prevent legal prosecution of the people who perform abortions. These mistakes lead to underestimation of the number of maternal

deaths and make it likely that a biased sample of maternal deaths will be used for calculating the MMR.

Note: please consult the discussion of the maternal mortality ratio for a full understanding of the difficulties of this measure.

Indicator

FACILITY CASE FATALITY RATE (CFR) -- POST-ABORTION COMPLICATIONS

DEFINITION

Deaths from post-abortion complications in the facility during a specified time period

Cases of post-abortion complications in the facility during the specified time period

Post-abortion complications include hemorrhage, infection, injury to the genital tract and internal organs, and toxic or chemical reactions from attempts at self-induced or unsafe abortion. Long term sequelae (physical impairment, pain, pelvic inflammatory disease, secondary infertility, increased rate of ectopic pregnancy) are not included in this indicator.

DATA REQUIREMENTS

Numerator A count of the deaths from the specified complications in the facility during the time period.

Denominator A count of cases of these complications in emergency obstetric/gynecology in the facility during the time period.

DATA SOURCE(S)

- Numerator: Facility records
- Denominator: Facility records

PURPOSE AND ISSUES

This indicator expresses the likelihood that a woman with a post-abortion complication will live after entering the medical facility.

Adapted from case fatality rate indicator (see p. 31); original prepared by D. Maine, Columbia University Center for Population and Family Health.

Causality: Clearly, the CFR is closely related to maternal mortality, at least at the facility level. What relationship this has to maternal mortality in the population depends on the proportion of women with post-abortion complications who are managed in facilities. The higher the proportion of women with complications managed in facilities, the closer the relationship between CFRs and the level of maternal mortality in the population.

Feasibility: Once data on complications are being collected, this is relatively easy to calculate. However, definitions of types of complications should be standardized within facilities; standardization across facilities is often problematic.

Responsiveness: This should respond to changes within a fairly short period of time -- e.g., 6-12 months.

Population- or Facility-Based: Facility-based.

Interpretation: The CFR is affected not only by the quality and promptness of medical care provided in the facility, but also by the condition of the woman upon admission.

Where the number of post-abortion complication cases is small, the CFR will not be stable enough to be meaningful. If there are a large number of cases, then CFRs can be calculated for particular complications.

As case-fatality information from a variety of settings in developing countries, we will see

whether certain limitations should be suggested when comparing CFRs from different institutions or settings. For example, it may not be valid to compare CFRs from health centers and hospitals, since women with serious complications may be referred to the hospital at the last moment, where they die. This would lower the CFR at the health center and raise it at the hospital.

One way to disentangle the CFR components is to gather data on other indicators of quality of care. This may be a reflection of providers willingness to attend to post-abortion care. For example, you can analyze the admission-

to-treatment time interval (either for all complications or for a subset). Although there is only a little experience with this statistic, experience in West Africa shows that, in general, facilities with long waiting periods for emergency treatment also have relatively high CFRs (PMM Network, in press).

A somewhat more complicated, but very informative, exercise is to gather information about the condition of the women on admission (e.g., pulse, blood pressure and temperature). This would also help disentangle the effect of women's condition from that of the quality of care.

Indicator

TOTAL NUMBER OF UTERINE EVACUATIONS PERFORMED FOR TREATMENT OF INCOMPLETE ABORTIONS

DEFINITION

The total number of uterine evacuations performed to treat incomplete abortion during a defined reference period (e.g., one year). In a post-abortion care setting, this term refers to evacuations performed for treatment of incomplete abortions, whether resulting from a poorly performed induced abortion or a spontaneous abortion.

DATA REQUIREMENTS

Counts of persons during the reference period who obtain a uterine evacuation.

DATA SOURCE(S)

The source of data for this indicator will be service statistics from health facilities providing uterine evacuations for treatment of incomplete abortion. In large health facilities in developing countries uterine evacuations may be performed in either the gynecological ward or the emergency room. Where this is the case, data collection for this indicator should include data from both types of location.

While records and charts routinely contain information on obstetric procedures such as uterine evacuations performed, in many facilities data will not be kept in summary logbooks or current MIS systems. In most areas, changes to existing data collection procedures/MIS systems will be necessary if data for this indicator are to be collected routinely.

PURPOSE AND ISSUES

This indicator assesses the number of uterine evacuations being performed at SDPs. It serves administrative purposes by providing information useful in calculating resource needs. When data on this indicator are collected at various levels of the health services it can be used for calculating resource needs at the different levels.

Declines in numbers of uterine evacuations may reflect drops in the availability of supplies, service interruptions, shortages of trained personnel and a variety of other service-related factors. If all of these factors are ruled out, declines could reflect demand factors such as lack of knowledge or confidence in services or fewer pregnancies due to increased family planning use. In a restrictive environment, changes in this indicator could reflect changes in the availability of safe abortions.

By assessing the number of uterine evacuations performed to treat complications of abortions which have been initiated outside of the health services, this indicator can provide planners with information useful for calculating the cost of treatment of incomplete abortions to the health system.

There is considerable interest on the part of policy-makers and health planners to use this indicator, or the related indicator "number of hospitalizations which are abortion-related" to estimate the number of induced abortions occurring in a population. One difficulty with

Prepared by Victoria M. Ward, Center for Population and Family Health, Columbia University School of Public Health.

this is determining which uterine evacuations are used for treating spontaneous abortions and which are used for treating induced abortions.

While it is possible to distinguish between abortions induced at a specific SDP and those initiated elsewhere, it is more difficult to distinguish between induced abortions and spontaneous miscarriage. Clinical evidence is often not conclusive. Reports may also be heavily biased in restrictive environments. Even where the service provider is fairly certain that an abortion in progress has been externally induced, they may choose not to report this in the records due to a legally and/or socially restrictive environment. This results in service data which are potentially misleading concerning the issue of spontaneous versus induced abortions.

Several approaches have been used to attempt to distinguish between spontaneous and induced abortions. These range from a series of questions asked of the client, to multipliers based on the biological occurrence of spontaneous abortion, to multipliers based on expert opinion of the proportion of hospitalizations which are due to induced abortion.

This indicator might also be useful for estimating the extent of induced abortion in countries where abortion is restricted. Researchers have utilized data on hospitalizations to construct such estimates. The number of abortion-related hospitalizations can be inflated to estimate the number of abortions in the population. Where data on uterine evacuations are more available, it would be worthwhile to examine how data on actual procedures vary from data on hospital admissions for this purpose. See the discussion of the indicator, "Total number of admissions for abortion-related complications."

Limitations: There are several issues which may contribute to under-reporting of the data on abortion-related complications. Since treatment of abortion complications can easily be performed in a private sector service provider's office, many abortion complications will not be reflected in statistics from public sector SDPs. In some areas with highly restrictive climates where women are subject to sanctions, abortion-related complications may be under-reported by well-meaning service providers trying to protect clients.

Indicator

TOTAL NUMBER OF ADMISSIONS FOR ABORTION-RELATED COMPLICATIONS

DEFINITION

The total number of admissions for abortion-related complications during a defined reference period (e.g. one year). This indicator includes both complications resulting from spontaneous abortion (miscarriage) and those occurring as a result of induced abortions.

Post-abortion complications include hemorrhage, local and systemic infection, injury to the genital tract and internal organs, and toxic or chemical reactions from attempts at self-induced or unsafe abortion. Long term sequelae (physical impairment, pain, pelvic inflammatory disease, secondary infertility, increased rate of ectopic pregnancy) are not included in this indicator.

DATA REQUIREMENTS

Counts of persons who are admitted to an SDP for treatment of abortion-related complications during the reference period.

DATA SOURCE(S)

Service statistics from health facilities providing treatment of abortion complications. In large health facilities in developing countries treatment of abortion complications may be performed in either the gynecological ward or the emergency room. Where this is the case, data collection for this indicator should include admissions data from both types of location.

PURPOSE AND ISSUES

This indicator has administrative implications in that it can be used to track resource use and needs for treatment of abortion-related complications. It also has policy implications in that it is useful for assessing the cost of unsafe, induced abortions to individual SDPs or to a national health system.

This indicator includes both complications due to induced and to spontaneous abortions. While it is often of interest to distinguish between the two types in order to estimate the number of abortions which have been induced, this is often difficult. Clinical evidence is often not conclusive. reports may also be heavily biased in restrictive environments. Even where the service provider is fairly certain that an abortion-related complication is the result of an induced abortion, they may choose not to report this in the records due to a legally and/or socially restrictive environment. This results in service data which are potentially misleading concerning the issue of spontaneous versus induced abortions.

Several approaches have been used to attempt to distinguish between spontaneous versus induced abortions. These range from a series of questions asked of the patient to multipliers based on the biological occurrence of spontaneous abortion, to multipliers based on expert opinion of the proportion of hospitalizations which are due to induced abortion.

Prepared by Victoria M. Ward, Center for Population and Family Health, Columbia University School of Public Health.

This indicator can be used for estimating the extent of induced abortion in countries where abortion is restricted. Researchers have utilized data on abortion-related hospital admissions to construct such estimates. The number of abortion-related hospital admissions can be inflated to estimate the number of abortions in the population. A variety of multipliers can be used in order to do this. These multipliers will be region- and country-specific. They will vary depending upon the degree of restrictiveness of the legal and social climate, the availability of induced abortion performed by trained providers, the procedures clandestine providers use, the availability of antibiotics, and socioeconomic status of the women who undergo abortions.

To address the uncertainty related to these multipliers researchers have suggested the use of a range of estimates using several different multipliers (Singh and Wulf, 1994).

There are several issues which may contribute to under-reporting of the data on abortion-related complications. Since treatment of abortion complications can easily be performed in a private sector service provider's office, many abortion complications will not be reflected in statistics from public sector SDPs. In some areas with highly restrictive climates where women are subject to sanctions, abortion-related complications may be under-reported by well-meaning service providers trying to protect clients.

Indicator

PROPORTION OF ABORTION-RELATED OBSTETRIC COMPLICATIONS AT SERVICE FACILITIES

DEFINITION

Number of abortion-related complications at service facilities within a defined period

 Number of obstetric complications at service facilities within a defined period

The numerator includes all cases of women who require treatment for abortion-related complications at service facilities within the reference period. It includes both complications resulting from spontaneous abortion (miscarriage) and those occurring as a result of induced abortions.

The denominator includes all obstetric complications seen at the facility during the same reference period. These can be defined cases where the woman meets one of the following conditions:

- presence of an obstetric complication that should be treated with one of the following emergency services (parenteral antibiotics, oxytocics, and sedatives;
- manual removal of the placenta;
- removal of retained products of conception; or
- assisted (vaginal) delivery, obstetric surgery and blood transfusions.

DATA REQUIREMENTS

Counts of persons who require treatment for abortion-related complications during the

reference period for the numerator. Counts of persons who require treatment for any obstetric complications as defined above for the denominator.

DATA SOURCE(S)

Service statistics from health facilities providing treatment of abortion complications. In large health facilities in developing countries treatment of some obstetric complications may occur in either the gynecological ward or the emergency room (this is particularly true of abortion-related complications). Where this is the case, data collection for this indicator should include data from both locations.

PURPOSE AND ISSUES

This indicator has administrative implications in that it can be used to track resource use and needs for treatment of abortion-related complications. It also has policy implications in that it is useful for assessing the cost of unsafe, induced abortions to individual SDPs or to a national health system.

Changes in the indicator "proportion of obstetric complications at service facilities which are abortion-related" may reflect changes in the availability of safe abortion or changes in level of restriction of abortion. In many developing countries where antibiotics are widely available over-the-counter, it may also reflect changes in women's knowledge that they can take antibiotics preventively.

Prepared by Victoria M. Ward, Center for Population and Family Health, Columbia University School of Public Health.

This indicator includes both complications due to induced and to spontaneous abortions. While it is often of interest to distinguish between the two types in order to estimate the number of abortions which have been induced, this is often difficult. Clinical evidence is often not conclusive. Reports may also be heavily biased in restrictive environments. Even where the service provider is fairly certain that an abortion-related complication is the result of an induced abortion, they may choose not to report this in the records due to a legally and/or socially restrictive environment. This results in service data which are potentially misleading concerning the issue of spontaneous versus induced abortions.

Several approaches have been used to attempt to distinguish between spontaneous and induced abortions. These range from a series of questions asked of the client, to multipliers based on the biological occurrence of spontaneous abortion, to multipliers based on expert opinion of the proportion of hospitalizations which are due to induced abortion.

A similar indicator was discussed for inclusion, "the proportion of obstetric admissions which are abortion-related," but was considered less valuable. The denominator, "obstetric or gynecological admissions", is subject to considerable variation. This is because normal deliveries

(which make up a large part of that denominator) are highly sensitive to changes in cost, staffing patterns, preferences, etc. Admissions for emergency treatment, on the other hand, do not vary as much. What can happen is that the proportion will change radically simply because fewer women choose to deliver in hospital. Thus, while that indicator might be useful for resource planning, it will not be useful for assessing trends. The indicator, proportion of obstetric complications which are abortion-related, is more useful for tracking trends and is equally useful for estimating resources used to treat abortion-related complications. A second problem with using obstetric or gynecological admissions as the denominator is that many abortion-related complications will not be admitted into an obstetric ward, but rather will be admitted and treated in an emergency room and never classified as an "obstetric" admission.

There are several issues which may contribute to underreporting of the data on abortion-related complications. Since treatment of abortion complications can easily be performed in a private sector service provider's office, many abortion complications will not be reflected in statistics from public sector SDPs. In some areas with highly restrictive climates where women are subject to sanctions, abortion-related complications may be underreported by well-meaning service providers trying to protect clients.

Indicator

NUMBER OR PERCENTAGE OF WOMEN WHO HAVE PRESENTED FOR TREATMENT OF COMPLICATIONS OF ABORTION, BY TYPE OF COMPLICATION

DEFINITION

The number or percentage of women, by type of complication, who have presented to an SDP for treatment of complications of abortion (in a time period).

Calculation

of women by type of complication
 [X 100]
 total # of women presented at SDP with
 complications (in time period)

Illustrative Computation

of women who present with uterine
 perforation at SDP
 [X 100]
 total # of women who present with
 complications of abortion at SDP (during year)

6/24 x 100 = 25% of women with abortion complications
 have uterine perforation

DATA REQUIREMENTS

Service statistics/facility records

DATA SOURCE(S)

Periodic review of case log books, charts and
 other records

PURPOSE AND ISSUES

This indicator can be used by SDP administrators to establish a measure of the types of complications that women present within the clinic service area. This information can be used to plan service delivery programs and to educate providers in effective clinical management of the specific problems seen in the population. Tracking measures over time can alert providers of the need to modify interventions and/or training. However, if the number of cases is small, fluctuations in the statistic over time can result in questionable conclusions. Furthermore, the accuracy of this statistic is influenced by the quality of service statistics. For example, potential classification difficulties exist when a woman presents with more than one type of complication; determining the number of types of complications also is problematic when gaps exist in recording admissions. It is important to note that definitions of types of complications are often not standardized within the same facility, and clinicians and providers should attempt to agree on common definitions. Ideally, a maternal mortality review committee should monitor trends on a periodic basis.

Prepared by Ann Gerhardt, IPAS.

POLICY

- Degree of commitment of political and community leaders to address the public health problem of unsafe abortion through post-abortion care
- Existence of service and administrative policy on the elements of post-abortion care
- Extent of administrative and other restrictions on post-abortion care services

Indicator

DEGREE OF COMMITMENT OF POLITICAL AND COMMUNITY LEADERS TO ADDRESS THE PUBLIC HEALTH PROBLEM OF UNSAFE ABORTION THROUGH POST-ABORTION CARE

DEFINITION

Level of commitment is indicated by political and community leaders' statements in support of post-abortion care services, particularly related to the identification of unsafe abortion as a major contributor to maternal mortality and morbidity. Statements refer to any public acknowledgment in speeches or in written form, in official communications/documents (e.g., national development plan). Leaders may include high-level government officials responsible for governing the country, establishing its laws and allocating funds to different sectors or authorities in other fields, such as medicine or religion.

DATA REQUIREMENTS

Access to local media sources and public statements of officials.

DATA SOURCE(S)

Texts or videotapes of official speeches, newspaper articles, government communiques, official documents, and other publicly accessible media.

PURPOSE AND ISSUES

The purpose of this indicator is to assess the

degree of explicit political and community support, as demonstrated by recognized leaders, for provision of post-abortion care services. This commitment usually stems from a concern about the maternal mortality and morbidity that result from unsafe abortion and an expressed desire to implement effective strategies to reduce its negative consequences. Evidence that leaders are seeking to understand the problem of unsafe abortion may be seen by their participation in or support for the outcomes of international, national or community meetings that identify the parameters of this public health problem. One such landmark meeting was the International Conference on Population and Development convened in Cairo, Egypt in September 1994 in which resolutions were adopted urging significant attention to the consequences and prevention of unsafe abortion. The level of expressed support for the ICPD's Programme of Action, as the resolutions are called, by national or local leaders can be an important indicator of their commitment to addressing unsafe abortion.

Commitment of policy makers can be quantified as dichotomous answers to questions (does/does not support the issue) or a range of values can be attributed to a list of questions.

Prepared by Ann Gerhardt and Katie McLaurin, IPAS.

EXISTENCE OF SERVICE AND ADMINISTRATIVE POLICY ON THE ELEMENTS OF POST-ABORTION CARE

DEFINITION

This indicator relates to the existence of functional/operational policies within health systems for the provision of post-abortion care and related services. It has a categorical and a qualitative component. Categorically the first question to ask is what level of restriction exists, if any, on induced abortion at a national level. This assessment will provide an indication of the climate in which women seek access to abortion-related services.

Within any legal/regulatory environment surrounding the provision of induced abortion (restrictive or liberal), there should be service and/or administrative policies that reflect the kind, quantity and quality of post-abortion services provided. Notably, policies may contain information about the position, administrative and practical, of post-abortion services within the health structure. They may specify how spontaneous or induced abortion complications are to be dealt with administratively: i.e. How are complications recorded in health statistics? Are there referral or approval systems that women must traverse to obtain such services? Are there technical and training requirements laid down in policy that govern who can treat post-abortion complications, what training they must have in order to do so, and how treatment is to be carried out technically (e.g. vacuum aspiration vs. sharp curettage)? All of these have implications for the quality and safety of women's treatment.

These elements may comprise formal or informal policy. There may be Ministry of

Health guidelines or accepted, non-formalized medical school/professional organization standards and norms for training and practice.

Service and administrative policies may also contain information/requirements for a further element of post-abortion care: links to post-abortion family planning and other reproductive health services. Policies may also contain information about standards/requirements for fees for services.

DATA REQUIREMENTS

Formal written government/regional or national policies on the three elements of post-abortion care. Health department/medical system policies or standards and procedural guidelines on post-abortion complications, post-abortion family planning and links to other RH services. Indirect data sources to evaluate the efficacy of service and administrative policy in the delivery of safe, effective, and timely post-abortion complication treatment; rates and types of complications registered and treated; outcomes/follow-up for complications; general mortality/morbidity statistics for women of reproductive age; types of equipment or commodities manufactured/purchased/imported; training registers including number of doctors, midwives or others trained to treat post-abortion complications yearly. Similar indirect data sources to evaluate the quality and quantity of post-abortion family planning information, education and services and referral/treatment for other RH services.

Prepared by Erin McNeill, USAID.

DATA SOURCE(S)

MOH regulations, service statistics, DHS-type statistics, medical associations' written guidelines, curricula, standard operating procedures, training facilities graduation statistics.

PURPOSE AND ISSUES

The purpose of this indicator is to establish whether or not functional policies exist within a country's health system to support post-abortion care. Such policies will probably vary considerably in their scope and detail in different contexts as a function of the liberality or restrictiveness of abortion legislation and pervasive cultural, social, and religious norms about abortion. These policies will also vary as a function of the strength of the basic health care system and the relative emphasis on public versus private sector services.

The strength of this indicator in a given country is probably a good index of the quality and ease of access women have to post-abortion care services, i.e., well-elaborated policies about service and administration are more likely to engender functional service outlets than contexts in which no policies exist. Full policies may include designations of who may treat post-abortion complications, training and equipment, follow-up and services are needed, etc. While these parameters are not guarantees of quality, access to the above - mentioned services is more probable than in situations that rely on non-formal administrative structures which may lack consistency, accountability and scope for record keeping and evaluation. This indicator should be described and used in conjunction with other more direct indicators of quality in and access to post-abortion care services.

EXTENT OF ADMINISTRATIVE AND OTHER RESTRICTIONS ON POST-ABORTION CARE SERVICES

DEFINITION

Government and/or clinic level rules and regulations and logistical impediments (distance to clinic, number of accessible facilities offering post-abortion care services, cost, clinic hours, etc.) that make it difficult for women to receive post-abortion care.

DATA REQUIREMENTS

Procedures for post-abortion care as defined by national or local law, health regulations and service delivery points' policy.

DATA SOURCE(S)

- National or local laws on post-abortion care
- Health system regulations
- Clinic administrative procedures for patients/clients presenting for post-abortion care
- Information on medical infrastructure

- Interviews with staff at service delivery points

PURPOSE AND ISSUES

This indicator offers a measure of the existence of barriers to treatment of post-abortion complications, post-abortion family planning and links to other reproductive health services in terms of unnecessary program policies, regulations and procedures, as well as logistical access to services. Types of barriers include the distance of the medical facility from the woman's home, the number of accessible facilities, the cost of services, the length of time from admission to treatment as well as total length of stay in the facility, other hardships related to getting to the clinic, her age, or administrative or clinical procedures she has to undergo while there.

Any of these impediments may result in mortality or long-term morbidity.

Prepared by Andrea Eschen, AVSC (formerly at The Population Council).

Section C

TRAINING

- Existence of competency-based pre- and in-service training systems for post-abortion care
- Number and type of providers trained in post-abortion care counseling and family planning services

EXISTENCE OF COMPETENCY-BASED PRE- AND IN-SERVICE TRAINING SYSTEMS FOR POST-ABORTION CARE

DEFINITION

A system (or processes) exists in a country to ensure that all levels of providers involved in any aspect of post-abortion care have the knowledge and skills to effectively provide this care. This includes exposure as part of the standard educational process (pre-service), supplemented by technical updates or the acquisition of new skills to match changing job requirements (in-service or continuous education). A training system includes clinical networks where practice to achieve competency can take place, associated classroom teaching capabilities with appropriate educational materials, and a management system to ensure that training sessions are planned, monitored, evaluated and adopted, as necessary, to ensure that training needs are updated and continually met.

DATA REQUIREMENTS

Documentation that such a system or processes exists.

DATA SOURCE(S)

Training plans for the Ministry of Health or one or more NGO training organizations (in-service); curricula and course syllabi for all the health professional groups of interest; a reference document containing the latest technical information on post-abortion care (to serve as a standard for developing country level training materials); policy documents or medical guidelines outlining

which level of provider can provide what aspect of post-abortion care in a country; job descriptions detailing responsibilities of each provider group as they relate to post-abortion care.

PURPOSE AND ISSUES

This indicator reflects the extent to which training in post-abortion care is institutionalized in a country. External support for training in post-abortion care might meet short term training needs but gaps will arise as providers change job responsibilities, post-abortion care policies are modified, new technologies arise, etc. In-service training can be targeted to those who are in a job position that involve some aspect of post-abortion care. To make such training more efficient, however, it is useful if providers receive as much didactic training in the subject as possible as part of their health professional education. In such cases, in-service targets can be shorter (taking providers away from their work responsibilities for less time) and focused on technical updates and skills acquisition. In situations where clinical practice is possible as part of pre-service education, this should constitute part of the pre-service education program in this subject. Measuring and judging whether a "mechanism" exists that fulfills the above criteria requires a full understanding of the general in-service and pre-service training processes in a country, and how post-abortion care has been incorporated into this

Training

scenario. It also requires a certain level of expertise in post-abortion care to judge how up-to-date and comprehensive the training is.

An internationally recognized reference document that is current in content is useful to have in making this assessment.

NUMBER AND TYPE OF PROVIDERS TRAINED IN POST-ABORTION CARE COUNSELING AND FAMILY PLANNING SERVICES

DEFINITION

A count of how many health professionals receive formal (recognized) instruction in one or more aspects of post-abortion care, categorized by level of professional.

Training here refers to instruction that provides the learner with the ability (knowledge, attitude and/or skills) to satisfactorily provide the post-abortion services under discussion. Counseling involves, among other things, informing the client of her choice of actions, what these actions involve (e.g., their mechanism of action) and any potential risks or discomfort involved. Post-abortion care refers to the comprehensive elements of care as defined in the introduction.

Post-abortion FP refers to counseling in and referral for, or provision of a method of contraception within the first six weeks after treatment.

DATA REQUIREMENTS

Number of providers trained by content area;

Prepared by AVSC.

cadre/category of providers trained by content area.

DATA SOURCE(S)

Training statistics from the training institutions

PURPOSE AND ISSUES

This indicator provides a sense of the output over time of persons that have the knowledge and skills to provide good quality post-abortion care. This indicator itself, however, does not measure whether those trained are competent in the content areas of interest, nor if they actually use their skills once they return from training. The former is best measured using some kind of clinical checklist related to a competency-based training framework and the latter, during a follow-up site visit. Retention of skills can be documented during such a site visit using the same clinical checklist as was used to assess competency during training.

Section D

COUNSELING AND FAMILY PLANNING SERVICES

- Percentage of post-abortion care clients who receive counseling and referral or accept a family planning method at time of service
- Number or percentage of clients receiving appropriate counseling and information before, during, and after treatment

PERCENTAGE OF POST-ABORTION CARE CLIENTS WHO RECEIVE COUNSELING AND REFERRAL OR ACCEPT A FAMILY PLANNING METHOD AT TIME OF SERVICE

DEFINITION

The percent of women who receive counseling about family planning, fertility, and RTI prevention, and percent of women who receive referral or acceptance of family planning method after treatment of abortion complications.

Family planning acceptors are counted separately from those women who receive counseling for two main reasons: (1) Not all women at treatment facilities will accept a FP method at the time of service because an emergency situation may render a woman physically incapable of adopting a contraceptive method; (2) comprehensive family planning services may not be available at treatment facilities for the women to use.

DATA REQUIREMENTS

Counts of women attending health facilities for treatment of post-abortion complications during a given time period and the number of these women who received counseling/education about family planning and fertility and reproductive tract infection (RTI) prevention and those who received referral or acceptance of family planning before discharge.

DATA SOURCE(S)

- Service statistics
- Client records
- Client exit interviews

- Provider interviews
- Observation of services
- Provider interviews
- Observation of counseling

PURPOSE AND ISSUES

This indicator provides a profile of the level of post-abortion counseling and family planning services provided at health facilities. The objectives of post-abortion counseling and family planning services are to: (1) assist clients in making decisions and expressing their concerns, (2) inform clients about all aspects of post-abortion care, (3) inform clients about where and how to get comprehensive reproductive health care that meets their individual needs, and (4) encourage clients to get comprehensive reproductive health care that meet their individual needs. The counseling should provide clients with the information necessary for them to prevent post-abortion complications due to infection, understand when and where to seek care for complications if they arise, and how to prevent another unwanted pregnancy. The percent of all post-abortion care clients who accept a family planning method or referral should be carefully interpreted. The important factor is that all women treated for complications are counseled about family planning and given the opportunity to accept a method or referral.

At the treatment facilities, data will be obtained through review of clients' records and registers, client exit interviews, in-depth interviews with service providers, participant observations and through analysis of taped transcripts of counseling sessions. At family planning clinic settings, in-depth interviews with service providers, clients' sources of referral studies and analysis of clients' records will be used to obtain required data.

Qualitative data will be used to reinforce/clarify results obtained from quantitative data. Data collection may be difficult when the required data are not routinely collected. It may be necessary for data collection instruments and systems to be developed and implemented with the assistance of service providers. Service providers can then be trained and encouraged to collect the required data.

NUMBER OR PERCENTAGE OF CLIENTS RECEIVING APPROPRIATE COUNSELING AND INFORMATION BEFORE, DURING, AND AFTER TREATMENT

DEFINITION

This indicator measures the number or percentage of all clients who are provided adequate counseling and information, according to agreed-upon standards or guidelines. The quality of client education is an important contributor to the overall quality of services. Client education should include medical and other types of information offered to women as well as emotional support given during the treatment process. Written protocols for education are preferable because they usually specify what and how counseling and information should be offered. However, high-quality education can be provided in settings where written guidelines do not exist, in many cases because service delivery managers place a priority on this activity or staff have special skills in this area.

DATA REQUIREMENTS

Access to services; access to clients; and access to current facility protocol and procedure manuals.

DATA SOURCE(S)

Observation of counseling and services; exit interviews with clients; and review of protocols and procedure manuals.

PURPOSE AND ISSUES

Women treated for abortion complications rarely receive comprehensive information about their care. High-quality client education and counseling activities should encompass the following:

- Pre-procedure information, such as diagnosis, proposed course of treatment, benefits and risks of such treatment, and level of pain to be expected during and after treatment. This information should be given as part of the process of obtaining voluntary, informed consent for treatment.
- Emotional support during and after the evacuation procedure.
- Post-procedure care, such as informing client of warning signs that indicate the need for a return visit, timing of resumption of sexual activity and return to fertility, and instructions for use of medications.
- Post-abortion family planning should include, at a minimum, these three essential pieces of information: the woman's fertility will return rapidly; there are safe, effective methods available to delay a subsequent pregnancy, if she wishes; and locations where she can obtain counseling, methods and follow-up care upon her return home. More detailed counseling and method provision may also be provided, but all women should leave the treatment site with a basic understanding of this essential information.

Service delivery facilities offering post-abortion care have the responsibility to offer the above information to post-abortion care clients. Ideally, information should be pro-

vided orally and in writing. At the very least, however, the provider should present it orally.

When counseling and information should be offered is likely to vary according to how services are organized and the physical and emotional state of the client. The woman

who has complications from induced, septic abortion may be too ill at the time of treatment to be able to receive extensive counseling. SDP managers and staff should seek clients' views and assess how treatment services are delivered to determine the most opportune times to provide counseling and services.

ACCESS TO POST-ABORTION CARE

- Number, type and geographic distribution of SDPs that have commodities, equipment, and transport for post-abortion care
- Number or percentage of total clients who would refer others to services
- Knowledge of and willingness to use services within the service area

Indicator

NUMBER, TYPE AND GEOGRAPHIC DISTRIBUTION OF SDPs THAT HAVE COMMODITIES, EQUIPMENT AND TRANSPORT FOR POST-ABORTION CARE

DEFINITION

The number of service delivery facilities categorized by type of facility and location, that have the required commodities, equipment and transport to offer post-abortion care. Required commodities and equipment are listed below.

DATA REQUIREMENTS

- Accurate and up-to-date information on facilities providing post-abortion care.
- An assessment of the number of SDPs, by type of facility, that are stocked according to basic supply list required for provision of post-abortion care.

DATA SOURCE(S)

- Facility lists maintained by government sources and those provided by NGOs such as FP organizations, women's associations, professional associations and other private sector sources, including survey data and service statistics.
- Checklist for person conducting assessment of SDP, situational analysis, facility-based survey.

PURPOSE AND ISSUES

This indicator has two purposes. It serves to provide basic information on the supply of post-abortion care. Classification of facility type should be guided by their overall service

delivery such as primary, secondary and tertiary which take into account the facilities' equipment, competent and supportive staff, and ability to manage complications. The facilities should be grouped by the geographic and administrative division units used for health service delivery such as districts, states, provinces and regions.

The second purpose of this indicator is to measure the actual presence of adequate commodities, equipment and transport for post-abortion care within a designated health care service delivery system.

Weight of this measurement should take into consideration elements of the system being evaluated such as country/regional logistics and availability of commodities; regional infrastructure; ability to collect this data within the system.

Essential commodities and equipment for the third referral level include:

- sufficient quantity of uterine evacuation equipment for projected caseload;
- essential drugs;
- anesthetic equipment;
- laboratory equipment and reagents for microscopy, culture and basic hematology;
- blood or blood substitutes;

Prepared by Beth Ann Plowman, USAID; and AVSC.

- blood collection, transfusion and storage equipment;
- standard laparotomy;
- pregnancy tests;
- ambulance;
- full range of contraceptives;
- supplies for decontaminating, cleaning, high level disinfecting or sterilizing and storing all instruments; and
- proper disposal protocols and supplies (drum incinerator, etc.).

Essential commodities and equipment for the second referral level include:

- essential drugs;
- center exam kit for hemorrhage or abortion management and sepsis treatment;
- laboratory equipment for complete blood count and hemoglobin level;
- full range of contraceptives;

- transport unit (including jeep, motorcycle, 2-way radio); and
- life saving skills unit.

Essential commodities and equipment for the first referral level include:

- essential drugs;
- health post exam kit for sepsis treatment and abortion management;
- oral contraceptives, Depoprovera, and condoms;
- transport unit (including motorcycle, bicycles, 2-way radio); and
- life saving skills unit.

Some of the data for these indicators may well be generated through collection of information for other post-abortion indicators particularly those listed as functional outputs. Moreover, these administrative measures, when coupled with denominator data on the population to be served could be used as population-based service availability measures.

Indicator

NUMBER OR PERCENTAGE OF TOTAL CLIENTS WHO WOULD REFER OTHERS TO SERVICES

DEFINITION

The number or percent of all post-abortion clients from the SDP who say they would refer services to other women.

DATA REQUIREMENTS

Access to clients

DATA SOURCE(S)

Exit interview with clients

PURPOSE AND ISSUES

This indicator is one quality of care measure at the SDP. If women will not refer others to the SDP, then problems in service delivery may exist. Designing programs that reflect

client needs can enhance both the use and efficiency of services. This measure can point out gaps or weaknesses in service delivery from which a strategy for improvement can be developed and implemented.

Issues of consistency and accuracy exist when collecting data by exit interview. First, access to and cooperation of individuals willing to be interviewed may be difficult. Additionally, a courtesy bias toward the interviewer may prompt women to give what they perceive as expected responses to questions rather than their own opinions. Accuracy can be increased by asking a variety of questions and including open-ended questions about different areas of service delivery.

Prepared by Ann Gerhardt, IPAS.

KNOWLEDGE OF AND WILLINGNESS TO USE SERVICES WITHIN THE SERVICE AREA

DEFINITION

Number or percent of women in the service area who say they know that post-abortion care services exist and are available; number or percent who say that post-abortion care services are physically accessible; number or percent who say they can afford post-abortion care services; number or percent who say they would use post-abortion care services.

DATA REQUIREMENTS

Access to women in the service area.

DATA SOURCE(S)

Community survey, exit interviews in health-care facilities; focus groups of clients; follow-up interview with clients.

PURPOSE AND ISSUES

This indicator covers a number of different aspects that relate to the quality of care, and specifically, women's perceived access to care. It does not measure actual physical accessibility to a service delivery point, but measures women's perceptions about the services. The information gained from this indicator can provide insight into the barriers that hinder women's ability to receive prompt care. Several of these barriers are:

- lack of knowledge about the availability of services;
- location of service delivery points caused by the centralization of post-abortion care

services in urban settings, limiting the geographic proximity of most women to services;

- unaffordable cost to the woman, including fee for the procedure, purchase of medical supplies, and opportunity costs of time away from family and work, placing financial limits on women and their families;
- punitive, coercive or other non-supportive attitudes on the part of providers and others in the service delivery setting or within the community toward women who seek services and toward providers who offer post-abortion care, limiting the number of women who say they would use post-abortion care; and
- bureaucratic regulations that inhibit access.

Timely use of services will be more likely if clients have a positive perception of the accessibility of the services. Lack of awareness of the services available has important implications. Clients may be aware of only one service facility, and unaware of alternative, and possibly higher quality services. In such cases, dissatisfaction with the quality of the services provided may result in delay in seeking treatment or unwillingness to refer others for treatment.

This indicator measures qualitative factors and has certain limitations. First, women may be reluctant for various reasons to participate

in an interview or survey process within the health-care facility. Second, in cases of emergency treatment for incomplete abortions, women may respond quite differently depending on whether the abortion was induced or spontaneous. Sensitivity to the woman and her condition by interviewers is extremely important and the study design must take into account the broad social and psychological factors that influence women's responses in each community. For example,

biased responses could occur if interviews take place in settings where women are coerced or treated harshly and, as a consequence, are afraid to respond honestly. There also may be a strong courtesy bias toward the interviewer. Community surveys around abortion and reproductive health issues require sensitivity to implement successfully, but can provide valuable information.

TECHNICAL QUALITY OF SERVICE DELIVERY

- Existence of effective quality assurance mechanisms for post-abortion care
- System for monitoring and evaluating post-abortion care services
- Existence of patient education protocols for post-abortion care
- Availability of system to stock essential supplies and facilitate transport of referrals

Indicator

EXISTENCE OF EFFECTIVE QUALITY ASSURANCE MECHANISMS FOR POST-ABORTION CARE

DEFINITION

Ability of the management and staff to monitor quality assurance in post-abortion care. This includes three elements: medical systems, interactions with clients and program management.

DATA REQUIREMENTS

See below for indicators under each element.

DATA SOURCE(S)

Evidence of the availability of established standards/guidelines and/or protocols for clinical practice, supervision, monitoring and reporting of complications, mechanism for upgrading skills and knowledge.

Assessment of adherence to established standards/guidelines and/or protocols.

PURPOSE AND ISSUES

The purpose of this indicator is to provide a basis for assessing the quality of three key elements. Each of these elements includes several indicators as follows:

- Medical systems to monitor safety and adherence to clinical guidelines or protocols:
 - clinical guidelines/standards or protocol;
 - medical records;
 - mortality/morbidity data;

- reporting and complications monitoring system;
- interviews with clinical personnel;
- observation of clinical practice; and
- inventory of necessary equipment, supplies and drugs for procedures and for emergency preparedness.

- Interactions with clients to monitor voluntarism, informed choice, adherence to counseling protocols:

- counseling guidelines;
- informed consent forms and procedure;
- medical records;
- focus group discussions with clients;
- observation of interaction;
- interviews with clients; and
- interviews with service providers.

- Program management to monitor client flow, program linkages for reproductive health service, record keeping systems, commodities/equipment status, staffing, supervision systems, and adherence to guidelines/protocols:

- client flow analysis;

- guidelines for triage, screening, referral;
- record keeping system;
- data on commodities/equipment;
- program personnel data system, including competency assessments; and
- guidelines or protocols for entire service.

If each element exists and is actively pursued to assure quality post-abortion services, clients are then likely to receive appropriate

care. This indicator can be facility-based and used to monitor the quality of care extended at a given facility over time. Alternatively, values on the indicator across facilities can be compared or related to outcomes such as case fatality rates. Establishing values for the indicator will require periodic audits of facilities and client and provider interviews and observations to determine the degree of adherence to service norms, guidelines or protocols. These assessments allow program managers to determine service gaps and other deficiencies and plan appropriate responses to identified needs.

Indicator

SYSTEM FOR MONITORING AND EVALUATING POST-ABORTION CARE SERVICES

DEFINITION

The existence of a system designed to monitor and evaluate post-abortion care services; the effectiveness of the implementation of the system and evidence for a feedback mechanism for using the information collected as part of this system to improve the program. Examples of how such a system might be implemented include: record keeping requirements for clinics and hospitals designed to track levels of and types of service utilization (i.e., abortions, treatments of complications, post-abortion family planning counseling and services); special client/provider studies; audits of clinic or hospital records to evaluate proper case management according to patient age and condition; and program level tracking of abortion-related morbidity and mortality.

DATA REQUIREMENTS

Documentation of system design; evidence of data collected for this system and documentation of review and utilization of data collected.

DATA SOURCE(S)

Policy documents/protocols which define system; clinic/hospital record keeping systems/data summaries/reports on studies conducted to monitor and evaluate services; agendas/minutes of meetings held to review data collected as part of the system and reports documenting using data to make decisions about program design and implementation. Interviews with service providers/policy makers.

PURPOSE AND ISSUES

The purpose of this indicator is to evaluate the degree to which a program is assessing its performance with regard to level and quality of services in order to improve program use or quality. The underlying assumption is that the greater the effort to collect and use these data, the better the quality of the program. (It is important to remember this indicator is an assessment of the monitoring mechanism, but the data from the individual components also are all indicators in themselves.) Some qualitative assessment will have to be made by the assessor whether the system in place requires information that is relevant to the evaluation of the program being implemented. Although the types of data would vary depending on the program in question, a checklist should be developed for assessment of the system (see preceding indicator: "Existence of effective quality assurance mechanism for post-abortion care"). At a minimum a program should track the types of services used by relevant population parameters and ensure that protocols for services are being followed. The assessor also would determine the extent to which a data collection system is in place that is logistically rational and does not place an undue burden on the service provider. Evidence for this may be found in the degree to which the information that is required is actually being collected in a sample of service delivery sites and through interviews with service providers. Finally, an assessment needs to be made of the extent to which the data are actually being used to inform decisions about the program.

Prepared by Cindy Waszak, Family Health International.

EXISTENCE OF PATIENT EDUCATION PROTOCOLS FOR POST-ABORTION CARE

DEFINITION

Written protocols for patient education provide guidelines about the type of counseling and educational services that should be offered to post-abortion clients. Protocols can be developed at the central health system level, other system level (e.g., region or district) and/or at the local SDP. High-quality patient educational activities can occur in the absence of protocols. However, the existence of written guidelines provide evidence that patient education is an important component of post-abortion care. Furthermore, comprehensive, up-to-date protocols can help ensure consistency in the delivery of counseling among many SDPs.

DATA REQUIREMENTS

Access to health system documents.

DATA SOURCE(S)

Review of procedure manuals, evaluation and supervisory forms, and training curricula.

Prepared by Janie Benson, IPAS.

PURPOSE AND ISSUES

Written protocols should indicate that all post-abortion clients seeking treatment of complications should be provided with comprehensive counseling. Protocols should describe the essential elements to be included in counseling: pre-procedure information; post-procedure care; need for emotional support during treatment; and post-abortion family planning and other reproductive health issues. Protocols should also describe the mechanisms for ensuring patient confidentiality, informed consent and means for protection against coercion.

Training in the implementation of patient education protocols should be a standard practice for all staff. This includes initial training for new staff, as well as refresher training for all relevant personnel. The guidelines should also be incorporated into supervisory forms and practices. Periodic review and updates of patient education protocols should occur, along with training of personnel in the revised guidelines.

Indicator

**AVAILABILITY OF SYSTEM TO STOCK ESSENTIAL SUPPLIES
AND FACILITATE TRANSPORT OF REFERRALS**

DEFINITION

The system for providing or stocking essential supplies and equipment includes the FIVE RIGHTS: "The right to quantity of the right quality of goods sent to the right place at the right time and the right cost." Transport of referrals includes access to and availability of timely means to treatment of abortion complications and related services. Supplies include family planning commodities and materials, pain control medications, disinfectants, and antibiotics.

DATA REQUIREMENTS

Storage capacity which meets acceptable standards, personnel trained in logistics related to health and medical supplies as well as family planning commodities, frequency of stock-outs, pipeline wastage, percentage of service delivery points stocked according to plan, types and locations of emergency and other transportation available.

DATA SOURCE(S)

MIS, supervisory or staff reports, survey samples, training program records, client interviews.

PURPOSE AND ISSUES

The purpose of this indicator is to provide a basis for assessing commodities and logistics at the system level, to assess the minimum system which must be available in order to provide services and adequately trained personnel to deliver the services. It does not provide information regarding the quality of the equipment, service infrastructure or training. Except in those sites where an emergency transportation system is available and accessible, issues of confidentiality may intrude in the process of obtaining accurate data (i.e., in situations where abortion laws are extremely restricted, individuals who provide transportation to women in obtaining post-abortion care may not want to be identified).

Prepared by Anne Wilson, USAID.

QUALITY OF CARE: THE CLIENT-PROVIDER INTERACTION

- Compliance with provisions for maintaining confidentiality
- Compliance with provisions for obtaining consent
- Compliance with provisions for protecting against coercion
- Interactions between women and providers/staff

Indicator

COMPLIANCE WITH PROVISIONS FOR MAINTAINING CONFIDENTIALITY

DEFINITION

Health personnel's adherence to established institutional procedures to ensure that medical records are restricted to clinical use and that client information gathered for research will not be disclosed for other purposes.

DATA REQUIREMENTS

Information on institutional guidelines for maintaining confidentiality, and if research is conducted, a statement approved by the internal review board or ethics committee about maintaining confidentiality.

DATA SOURCE(S)

- Institution's procedures manual
- Interviews with clients
- Interviews with providers
- Informed consent with confidentiality statement (if written informed consent is standard clinical practice)

PURPOSE AND ISSUES

This indicator's purpose is to ensure that medical facilities comply with established

procedures to maintain clients' confidentiality. These measures suggest respect for clients' rights and well-being and an indication of the quality of care the facility provides. Measures such as these are integral to good medical ethics and practice but are particularly important in countries where abortion laws and services are restricted as they help protect women against possible recrimination. However, it may be difficult to guarantee that records or research findings remain confidential and one has to consider seriously with whom the information is being shared so that no harm comes to the client.

Confidentiality may be more difficult to uphold when post-abortion clients are referred to other facilities for family planning or other reproductive health services. Their names may be included in the referrals or medical records may indicate that they have had an abortion in reference to appropriate methods of post-abortion contraception. The experience with HIV referrals can probably lend insight to effective mechanisms for post-abortion patients.

The procedures manual should also include actions taken when health care personnel breach clients' confidentiality. Consequences should be detailed in the manual.

Prepared by Andrea Eschen, AVSC.

COMPLIANCE WITH PROVISIONS FOR OBTAINING CONSENT

DEFINITION

Health personnel's adherence to established institutional procedures to ensure that providers give clients sufficient information about the procedure and allow them to ask questions in order to ensure that they understand the treatment and agree to undergo it.

DATA REQUIREMENTS

Proportion of women who come to a medical facility for post-abortion care who are given sufficient information about the risks and benefits of treatment and can then make a voluntary choice to undergo treatment.

DATA SOURCE(S)

- Institutional procedures manual
- Interviews with clients
- Interviews with providers
- Records of informed consent (if written informed consent is standard clinical practice)
- Trained observer (but consider the confidentiality issue)

Prepared by Andrea Eschen, AVSC.

PURPOSE AND ISSUES

The purpose of this indicator is to ensure that facility staff provide women with sufficient information about treatment of abortion complications to enable them to understand their care before they receive it. Adequate information from health care providers helps to ensure that the woman understands the treatment she is to receive and knows how to take care of herself afterwards. These measures suggest respect for clients' rights and well-being and an indication of the quality of care the facility provides.

To gather data on informed consent, client and provider interviews could be used with the understanding that there may be some under-reporting of induced abortion depending on the social and political environment surrounding abortion in a particular country. If abortion is condoned, clients may be more inclined to talk about their experiences as opposed to countries where it is restricted or unacceptable. There may also be a selectivity bias as some women may feel more comfortable discussing their experiences than others.

The procedures manual should also include actions taken when health care personnel do not properly obtain consent or forgo this step altogether. Consequences should be detailed in the manual.

Indicator

COMPLIANCE WITH PROVISIONS FOR PROTECTING AGAINST COERCION

DEFINITION

Health personnel's adherence to established institutional procedures to provide women with information about treatment enabling them to choose to undergo it or not and to choose a method of contraception if they wish.

DATA REQUIREMENTS

Proportion of women who come to a medical facility for post-abortion care who were given sufficient information to make a voluntary choice to undergo treatment. If the facility provides family planning services, it may also include the proportion of women who were given a range of contraceptive options if they decide to initiate a method at that point.

DATA SOURCE(S)

- Interviews with clients
- Interviews with providers
- Focus group discussions with clients
- Records of informed consent (if written informed consent is standard clinical practice)
- National and local level policies on conditions in which abortion is available

PURPOSE AND ISSUES

In some countries, post-abortion care occurs with the understanding that either an IUD or surgical contraception will be provided whether or not this is the woman's method of choice or whether or not she wants it at that or another time. To enable women to make appropriate choices, clients and providers need to be educated on the range of methods available, the conditions which make one method preferable over another, and recognize that women have the ability and right to make their own decisions. Acceptance of contraception should never be a requirement or condition of receiving treatment for abortion complications.

Women (and sometimes providers of emergency treatment) may be coerced by legal or other authorities into admitting illegal abortion and/or naming abortion providers. Appropriate observation of services, client and provider interviews, and analysis of the policies under which post-abortion care is made available can help determine how women are treated within facilities.

To ensure that there is no coercion, providers and counselors must provide women with adequate information about treatment and contraception and allow them to reach their own decisions. This issue can be addressed and monitored through training and supervision of health personnel. Consequences should be detailed in the manual.

Prepared by Andrea Eschen, AVSC.

INTERACTIONS BETWEEN WOMEN AND PROVIDERS/STAFF

DEFINITION

Number/percent of all providers and staff with direct contact with post-abortion clients and who demonstrate respect for clients during these interactions.

DATA REQUIREMENTS

List of providers; access to services; access to clients

DATA SOURCE(S)

Observation of provider/client interactions; exit interviews with clients; focus groups with women

PURPOSE AND ISSUES

This indicator measures one component of quality of care. It encompasses all of the interactions, both verbal and non-verbal, that women have with providers and staff when they seek and receive post-abortion care. It also measures both the content of information given and the quality of the contact between providers and clients. Interactions occur during exchanges of information between clients and providers/staff, in counseling sessions, and during diagnosis, treatment and recovery. Interactions need to be characterized by:

- respect and support for women and their situations while meeting immediate medical needs;

- non-judgmental attitudes and absence of provider bias or coercion in provision of care;
- an atmosphere of trust between providers/staff and women;
- respect for women's need for confidentiality;
- respect for women's ability and right to make voluntary, informed decisions and choices about their health and fertility;
- an opportunity for women to express their views, concerns, and questions; and
- responsiveness to women's expressed concerns.

Measuring and documenting the quality of the interaction between clients and providers may be difficult. Information can be collected by observation and by individual interviews with clients and groups of clients. Limitations are the same as for any qualitative indicator. For example, responses may be biased if interviews occur in the health facility because of courtesy toward the interviewer. Interviewers must be trained to interact carefully with and sensitively toward clients.

Section H

COSTS OF POST-ABORTION CARE

- Ratio of total public recurrent expenditures at national and local levels on post-abortion care to total recurrent expenditures, expressed as percentage
- Costs to system for the provision of treatment of post-abortion complications
- Costs of post-abortion care to user (financial and opportunity costs)
- Social and psychological burden of post-abortion care to user

RATIO OF TOTAL PUBLIC RECURRENT EXPENDITURES AT NATIONAL AND LOCAL LEVELS ON POST-ABORTION CARE TO TOTAL RECURRENT EXPENDITURES, EXPRESSED AS PERCENTAGE

DEFINITION

Percentage of total public recurrent expenditure (at national or local levels) on OB/GYN care allocated to post-abortion care.

DATA REQUIREMENTS

Public sector recurrent expenditures on post-abortion care in current prices; public sector recurrent expenditures (for ob-gyn care) in current prices.

DATA SOURCE(S)

Hospital and clinic service statistics and log books; surveys on time and resource use; national accounts data on recurrent expenditures.

PURPOSE AND ISSUES

This input indicator is a measure of the commitment of resources by a host country government to providing post-abortion care. To the extent that services are financed by donor contributions and donor-financed expenditures are not listed separately from those dependent on host-country government resources, it does not indicate willingness of the host country government to devote national resources to providing post-abortion services.

Because post-abortion care is usually provided along with other OB-GYN/MCH services, it is unlikely that an identifiable line item exists in the ministry's/organization's

recurrent budget that can be linked directly to these services. Moreover, where personnel are engaged in providing health services in addition to post-abortion care, it may be difficult to allocate some proportion of their time to post-abortion care. The simplest and most commonly used approach (but probably the least reliable) is to interview supervisors and health workers, asking them to estimate the percentage of their time spent providing these services. The figure could be adjusted by reviewing hospital or clinic patient log books. This percentage can then be used as a basis for allocating labor and other joint costs. Alternatively, a time use survey can be carried out in a sample of facilities, using either the technique of patient flow analysis or direct observation of health workers at specified intervals (i.e., work sampling).

One important caveat related to this indicator should be considered by evaluators. "High" or "low" percentages of OB-GYN expenditures dedicated to post-abortion care should be carefully interpreted. For example, a relatively high proportion can indicate that funds for post-abortion care are not being spent efficiently, (e.g., centralized services at high-cost tertiary centers, use of D & C in a main operating theater and/or long patient stays). Reductions in the percentage over time can mean that post-abortion care resources are being used more efficiently, that caseloads have dropped, that too few resources are dedicated to post-abortion care and/or that other OB-GYN expenditures have increased.

Indicator

COST TO SYSTEM FOR THE PROVISION OF TREATMENT OF POST-ABORTION COMPLICATIONS

DEFINITION

Hospital-based costs of providing emergency care to treat septic or incomplete abortions.

DATA REQUIREMENTS

Health facility-based estimates of staff time, equipment and drugs used to provide emergency treatment for complications of spontaneous or unsafely induced abortion.

DATA SOURCE(S)

Expenditure data from hospitals (or other facilities) that provide emergency treatment of abortion complications.

PURPOSE AND ISSUES

This indicator measures the costs to individu-

al health care facilities for treating incomplete or septic abortions. The indicator does not quantify staff, equipment and drugs for providing legally sanctioned induced abortions in circumstances where such indications exist. Also, costs are not calculated, in this indicator, for provision of post-abortion FP counseling and services or for other RH care for which a woman might be referred following emergency treatment.

The health facility-based costs of providing emergency care is a measure of the opportunity costs to the system of incomplete or septic abortions (and of legal restrictions against abortions), as acute hospitalizations for post-abortion care use up resources that could be devoted to other purposes.

Prepared by Marge Horn, USAID.

COSTS OF POST-ABORTION CARE TO USER (FINANCIAL AND OPPORTUNITY COSTS)

DEFINITION

Costs of post-abortion care to user is defined as the resource burden, the total financial or market cost or burden to the client--service and associated fees, time lost from paid or unpaid employment. This indicator provides understanding of why clients may or may not utilize post-abortion care in a given situation.

employment as a result of treatment complications ; and

- reported physical complications of service utilization.

DATA REQUIREMENTS

- Fees for service
- Provider records on complications of abortion and costs of treating iatrogenic complications
- Responses to survey questions on:
 - costs of travel to and from service provider;
 - other costs such as lodging, food associated with use of service;
 - costs of missing paid employment;
 - costs of treatment for complications arising from service utilization;
 - time missed from paid or unpaid

DATA SOURCE(S)

Service statistics, client interviews (interviews, surveys and focus groups).

PURPOSE AND ISSUES

Client cost of post-abortion care refers to the financial and resource burden. Financial costs are calculated by service fees, costs of travel to/from service site, and time lost from paid employment, and financial costs associated with treating complications resulting from service utilization.

Physical costs involve complications arising from treatment, both short-term and long term, or from punitive or delayed treatment by service providers.

Collection of information includes client interviews in private interviews, surveys and focus groups in addition to service provider financial records.

Indicator

SOCIAL AND PSYCHOLOGICAL BURDEN OF POST-ABORTION CARE TO USER

DEFINITION

This indicator measures the social and psychological burden to women of post-abortion care. These may develop into financial cost burdens if families are disrupted and the woman's source of financial support is lost. The social burdens include family disruption, physical violence, loss of status within the family or community. Psychological burdens refer to worry associated with treatment, concern experienced by the woman over family or community reaction, mental stress associated with provider attitudes that demean or erode client self esteem.

DATA REQUIREMENTS

Client surveys which provide the following information

- Reported family disruption from any service utilization
- Concern expressed about family response to service utilization, possible physical complications which may arise from service utilization
- Reported domestic violence resulting from service utilization
- Reported negative interaction with service providers in the form of judgmental attitudes, punitive treatment measures, lack of response to complications, or

or other physical condition requiring medical attention

- Reported loss of status in community as a result of service utilization

DATA SOURCE(S)

Client interviews (individual and focus groups).

PURPOSE AND ISSUES

The purpose of this indicator is to assess the total price exacted upon clients who may choose to use post-abortion care.

Social costs must be assessed to include family disruption and loss of status within the family and community. Poor interpersonal interactions with care providers which affect self esteem and access to services must be considered. The incidence of physical violence resulting from family/others as the result of the woman utilizing services is a component of physical burden.

Psychological costs include fears and concerns associated with post-abortion care utilization, such as complications, or for other repercussions that the woman may face as a result of using the services. Psychological effects of negative client-provider or family interactions, such as lowered self esteem are also burdens to be assessed.

Prepared by Nancy Stark, USAID.

References and Appendices

- References
- Appendix A: Special Case Study on Obstructed Labor-Health Service Indicator
- Appendix B: Members of the Subcommittee on Safe Pregnancy
- Appendix C: Steering Committee of the RHIWG

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HEALTH SERVICE INDICATORS - CASE STUDY FOR OBSTRUCTED LABOR

Preamble:

Although ideally one would like to show immediate health impact on the community (or population being served), demonstrating such impact on maternal mortality or morbidity in most settings is not possible because of difficulties of measuring maternal deaths and relative inexperience in doing the measurement. Fortunately, since most maternal complications can only effectively be treated in a health facility, health impact can be assessed by looking at categories of three indicators, taken together

- I. Profile of Admissions
- II. Hospital Management
- III. Estimated Coverage by Hospital

Data on these indicators must be collected at **each health facility in the catchment area**.

The following is a set of health service indicators (output indicators) to assess the potential impact of interventions aimed at reducing morbidity and mortality associated with **OBSTRUCTED LABOR**. A similar set of indicators to assess the potential impact of interventions to reduce morbidity and mortality associated with **PUERPERAL SEPSIS** and **POSTPARTUM HEMORRHAGE** are available from the MotherCare Project.

Indicator

NUMBER OF DELIVERIES PER YEAR**DEFINITION**

The number of women who have been admitted for delivery and have actually given birth per year.

DATA REQUIREMENTS

Number of women who have been admitted for delivery and have actually given birth per year.

DATA SOURCE(S)

Register in the labor ward. These data are usually routinely collected. Note also to exclude women who were admitted in false labor and subsequently sent home.

PURPOSE AND ISSUES

Note that the actual number of women having given birth in the facility is required.

This excludes women admitted with complications after having given birth at home (BBA = born before arrival), e.g. for a retained placenta, or a woman admitted with a ruptured uterus who dies before she is delivered.

Purpose: To register all births in the hospital from which a denominator will be derived.

Causality: Pregnancy related mortality/morbidity will be registered.

Feasibility: Births can be registered easily if a delivery/labor ward is in place.

Responsiveness: Good if all births are registered.

Population or Facility-based: Facility-based.

Prepared by B. Kwast, MotherCare.

Indicator

NUMBER OF ADMISSIONS FOR PROLONGED LABOR, OBSTRUCTED LABOR, RUPTURED UTERUS, RETAINED PLACENTA, SEPSIS AND POSTPARTUM HEMORRHAGE

DEFINITION

Number of admissions for prolonged labor, obstructed labor, ruptured uterus, retained placenta, postpartum hemorrhage and sepsis. The definition is determined by the diagnosis and thus relies on the person registering and the woman's report. If this presents a problem, some attempt needs to be made to standardize or verify admission diagnoses.

Absolute numbers: no calculation is required.

DATA REQUIREMENTS

Separate column in labor ward or admission register for complications which were present on admission and those that developed after admission.

DATA SOURCE(S)

Most likely the labor ward register (possibly also operating theater register, admission or discharge register).

PURPOSE AND ISSUES

In order to assess quality of care in the hospital it is important to note whether the woman was admitted with the complication or developed it in the hospital.

Women who arrive moribund, for instance with a ruptured uterus, may not even be admitted formally if they die upon arrival.

Prepared by B. Kwast, MotherCare.

These women are not always registered so that the hospital does not get blamed for the demise. However, for the purpose of estimating coverage of complications in a health facility, it is important to register the woman. This should become clear to the staff if they are being involved in the effort to reduce maternal mortality and morbidity from the beginning. Nobody should be blamed.

The purpose is to calculate the proportion of women in labor who have complications on admission in labor and/or develop complications after admission. This is a proxy measure for the percent of women with complications in the population who were treated in health centers or hospitals.

Causality: It is assumed that an increase in percent of women with complications treated in hospitals, will reduce mortality/ morbidity in the community.

Feasibility: Easy to collect if the labor ward register is set up accordingly.

Responsiveness: Very responsive as it gives a good idea of the percent of women with complications treated in a health facility.

Population or facility-based: Even though data collection is facility based, it is a proxy measure for access of pregnant women with complications.

PERCENTAGE OF DELIVERIES ADMITTED WITH PROLONGED LABOR

DEFINITION

Prolonged labor can be defined as follows:

- In definite hard labor for > 12 hours (hard labor pains prevents women from doing ordinary household work and make her want to lie down). This definition can be changed at country level.
- Labor which has progressed to or crossed the action line on the partograph.

The indicator is calculated as:

$$\frac{\text{admission for prolonged labor}}{\text{number of deliveries}} \times 100$$

DATA REQUIREMENTS

Number of women who have been admitted for delivery and have actually given birth per year. Absolute numbers. No calculation required.

Separate column in labor ward or admission register for complications which were present on admission and those that developed after admission.

DATA SOURCE(S)

Register in the labor ward. These data are usually routinely collected. Note: exclude women who were admitted in false labor and subsequently sent home.

Most likely the labor ward register (possibly also operating theater register, admission or discharge register).

PURPOSE AND ISSUES

It would be helpful to register whether the women with prolonged labor came from home or have been transferred from a health center. Depending on the intervention at either community or health center level or both, the number of referrals may increase, which is good. This may show a concomitant decrease in obstructed labor and/or ruptured uterus.

Because prolonged labor is associated with increased risk of retained placenta and sepsis, it is important to differentiate between women admitted in prolonged labor or having developed prolonged labor in the labor ward. The latter information is not usually registered in the labor ward register and needs to be included if that indicator is needed for evaluation.

This indicator is used to determine the number of women admitted with prolonged labor as a percent of all complications.

Causality: An increase of admissions with prolonged labor should reduce the proportion of admissions with obstructed labor/ruptured uterus, retained placenta, postpartum hemorrhage and sepsis. It should also reduce mortality from these causes both in the hospital (case fatality) and community.

Feasibility: Possible to collect if the labor ward register is set up to record this information and there is a definition for diagnosis of prolonged labor.

Responsiveness: Very responsive, if women/TBAs, and peripheral health services recognize the prolonged labor early, make referrals, and families comply with the referral.

Population or facility-based: Facility based but a proxy for percent of women with complications who reach a health facility.

Indicator

PERCENTAGE OF DELIVERIES ADMITTED WITH OBSTRUCTED LABOR/RUPTURE OF THE UTERUS

DEFINITION

Obstructed labor is a condition due to a mechanical barrier that prevents the baby from being delivered through the birth canal without an operative procedure. The woman may be in shock because of severe sepsis from prolonged labor. This is differentiated from a ruptured uterus where uterine activity has usually ceased (except in rare cases of posterior rupture) and the woman may be in shock from severe internal hemorrhage. A woman with a ruptured uterus requires a laparotomy to extract the baby and either repair of the uterus or a hysterectomy.

The indicator is calculated as:

$$\frac{\text{admissions for obstructed labor/ruptured uterus}}{\text{number of deliveries}} \times 100$$

DATA REQUIREMENTS

Separate column in labor ward/admission register for differentiating complications which were present at admission from those which developed after admission.

DATA SOURCE(S)

Labor ward, admission and operating theater registers.

PURPOSE AND ISSUES

In order to be able to assess quality of care in the hospital it is important to note whether the woman was admitted with the complication or developed it in the hospital.

Women who arrive moribund, with a ruptured uterus, may not even be admitted formally if they die upon arrival. These women are not always registered so that the hospital does not get blamed for the demise. However, for the purpose of estimating coverage of complications in a health facility, it is important to register the woman. This should be clear to the staff if they are being involved in the effort to reduce maternal mortality/morbidity from the beginning. Nobody should be blamed.

The purpose is to determine the number of women admitted with obstructed labor as a percent of all complications.

Causality: An increase of admissions with obstructed labor/ruptured uterus should reduce the proportion of admissions with sepsis and vesico-vaginal (VVF) or recto-vaginal fistula (RVF). It should also reduce mortality from obstructed labor/ruptured uterus both in the hospital CFR and community.

Feasibility: Can collect if the labor ward register is set up to record this data along with a definition for obstructed labor diagnosis.

Responsiveness: Very responsive, if women/TBAs, peripheral health services/personnel recognize prolonged labor early, make referrals and families comply with referral.

Population or facility based: Facility based.

Indicator

PERCENTAGE OF WOMEN DEVELOPING PROLONGED LABOR IN THE HOSPITAL**DEFINITION**

Prolonged labor in hospital has two definitions:

- If partograph: labor has progressed to or beyond the action line.
- If no partograph (crude way): labor that extends for more than 12 hours post admission for women not admitted to hospital with prolonged labor. 90% of women not admitted with prolonged labor should be delivered within 12 hours of admission in established labor.

The percentage of women developing prolonged labor in the hospital should be \leq 15% of normal labor.

For definition 1, the indicator is calculated as:

$$\frac{\text{Women who have progressed to/beyond the action line}}{\text{number of women on partograph}} \times 100$$

For definition 2, the calculation is defined as:

$$\frac{\text{Women in established labor but admitted without prolonged labor not delivered within 12 hours}}{\text{number of women admitted in normal labor (not prolonged or obstructed)}} \times 100$$
DATA REQUIREMENTS

Number of women admitted for delivery and actually given birth per year. Absolute numbers. No calculation required.

Separate column in labor ward or admission register for complications which were present on admission and those that developed after admission.

DATA SOURCE(S)

Register in the labor ward. These data are usually routinely collected. Note also to exclude women who were admitted in false labor and subsequently sent home.

Most likely the labor ward register (possibly also operating theater register, admission or discharge register).

PURPOSE AND ISSUES

This indicator will give an idea of the early recognition of prolonged labor.

If the partograph is not completed for every woman who should have one, then the indicator is hardly valuable. It requires that all women have a partograph in labor except those admitted at 9 cm or full dilatation of the cervix. The delivery register should therefore have a column to indicate whether the woman had a partograph in labor.

It should be possible to calculate the length of labor in the labor ward from the admission time to delivery time. This is usually registered in the labor ward admission register.

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This calculation excludes women who have been referred with prolonged labor from outside the hospital whether on a partograph or not.

This indicator assesses quality of labor management in hospital. Prolonged labor should be prevented or recognized early and appropriately managed. If there are many women who develop prolonged obstructed labor after being admitted quality of care needs to be improved.

Causality: If there is a problem with prolonged labor in hospital, there will also be problems with PPH, retained placenta and sepsis. Morbidity will be more severe and

hospital stay will be prolonged.

Feasibility: These data are not easy to collect from registers unless admission time and admission dilatation are recorded in the admission register. If quality of care is to be assessed, an effort needs to be made to include these parameters in the admission register. A medical audit (record review) for all cases with prolonged labor is not feasible.

Responsiveness: Management of labor with a partograph to prevent prolonged labor and improve labor management is a proven intervention. It reduces PPH, sepsis, and intrapartum fetal deaths.

Population- or facility-based: Facility-based.

Indicator

NUMBER OF INCORRECTLY MANAGED CASES OF PROLONGED LABOR

DEFINITION

Correct management of prolonged labor = careful assessment and management at the action line of the partograph. If no partograph is used, a re-assessment should be performed if there is stasis in cervical dilatation over a period of 4 hours.

Options:

- Augmentation of labor with intravenous (IV) infusion of oxytocin
- Operative delivery
- Supportive management only with IV fluids with or without pain relief and with or without antibiotics if rupture of membranes > 12 hours
- Delivery not later than 7 hours after action line or commencement of oxytocin augmentation in prolonged labor

Incorrect management of prolonged labor = omission of any of the above and continuation of labor without medical decision.

The indicator is defined as:

$$\frac{\text{number of incorrectly managed cases of prolonged labor}}{\text{number of cases with prolonged labor occurring during hospitalization}} \times 100$$

DATA REQUIREMENTS

- Number of women who have been managed in labor with a partograph.

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- Number of women who reached the action line on the partograph.
- If no partograph is in use, then number of women not delivered within the labor ward within 12 hours.
- Details on management of labor.

DATA SOURCE(S)

- Labor ward register.
- Case records and completed partographs if in use.

PURPOSE AND ISSUES

If the quality of labor management is to be assessed with or without a partograph, case records need to be reviewed and/or observations need to be made. The decision at action line on the partograph and in a prolonged labor is a physician's decision as the woman is now a high risk labor case.

There needs to be a note that the midwife informed the physician at the right moment and that an assessment was made leading to a management decision. The appropriateness of the decision should be reviewed either through case audit or in a staff meeting at the beginning of the day when all partographs are reviewed. These are decisions to be made by the labor ward staff in the respective place.

Note: Similar indicators can be constructed for puerperal sepsis and postpartum hemorrhage/retained placenta after prolonged labor. The rationale being that both puerperal sepsis and retained placenta can be reduced when deviation from normal labor is recognized early and managed appropriately, thereby preventing prolonged labor > 12 hours and obstructed labor.

This applies only to those women whose labor was managed in hospital and who were admitted without complications.

This indicator assesses quality of labor management once prolonged labor is diagnosed against a protocol.

Causality: If labor is managed correctly once

early signs of prolonged labor are diagnosed, severe sequelae will be prevented, (e.g., hemorrhage, sepsis, obstruction/ruptured uterus, obstructed fistula). It also impacts on perinatal mortality.

Feasibility: This is difficult to assess and requires commitment if occurrence of prolonged labor in the unit is a problem. It requires establishment of protocols and a medical audit to assess adherence to the protocol.

Responsiveness: If labor is managed correctly, complications in mother and newborn as mentioned above, will be reduced.

Population- or facility-based: Facility-based.

Indicator

PERCENTAGE OF WOMEN ADMITTED WITH OBSTRUCTED LABOR/ RUPTURED UTERUS NOT DELIVERED WITHIN 2 HOURS

DEFINITION

The condition of obstructed labor/ruptured uterus is an emergency and requires prompt action after initial resuscitation of the woman. It is therefore reasonable to expect that the woman should be delivered within 2 hours of admission, taking into consideration time to prepare the operating theater if required.

The indicator is calculated as:

$$\frac{\text{number of women admitted with obstructed labor / ruptured uterus not delivered within 2 hours}}{\text{number of women admitted with obstructed labor}} \times 100$$

DATA REQUIREMENTS

- Registration of time of admission.
- Registration of the time of operation/delivery and details on condition of the woman on admission and her management.

DATA SOURCE(S)

- Labor ward register
- Operating theater register
- Case records and medical audit/case review process

PURPOSE AND ISSUES

The time interval between admission of a patient and actual operation for relief of the obstruction or laparotomy for ruptured uterus

is an indicator of quality of care. One should guard against rigid adherence to a time interval as the time interval between admission and operation is also related to the condition of the patient on arrival. This is the reason for encouraging a case review process.

Note also that the most common cause of obstructed labor is cephalo-pelvic disproportion (CPD). This is a condition which in many instances is over-diagnosed. With the introduction of partographic management, diagnosis of CPD has been demonstrated to fall in a WHO multicenter trial on the partograph (World Health Organization, "Partograph in Management of Labor", 1994). Concomitant with improved labor management and diagnosis of CPD, cesarean section rates were reduced.

Therefore, another indicator for hospital management and quality of labor management could be: the percentage of cesarean sections performed for prolonged labor. The purpose is to assess the hospital's ability to respond to a life-threatening obstetric emergency and is an indicator of quality of care.

Causality: The greater the efficiency in dealing with the emergency, the greater the reduction in severe sequelae from obstructed labor and maternal mortality. Case-fatality rates will also be reduced.

Feasibility: It is possible to collect this data provided that date *and* time of admission

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and date *and time* of procedure are recorded in the records. It requires a medical record review.

Responsiveness: If improvements in emer-

gency obstetric treatment are instituted, there should be a reduction in case fatality rates.

Population-or facility-based: This indicator is facility-based.

Indicator

PERCENTAGE OF DEATHS OCCURRING AMONG WOMEN WITH OBSTRUCTED LABOR

DEFINITION

Case fatality refers to deaths from specific causes where the denominator and the numerator contain the same condition. The indicator is calculated as:

$$\frac{\text{deaths from obstructed labor/ruptured uterus}}{\text{number of women with obstructed labor/ruptured uterus (at admission + occurring during hospitalization)}} \times 100$$

DATA REQUIREMENTS

Separate column in labor ward or admission register for complications which were present on admission and those that developed after admission.

Number of women who have been admitted for delivery and have actually given birth per year. Absolute numbers. No calculation required.

DATA SOURCE(S)

- Register in the labor ward. These data are usually routinely collected. Note also to exclude women who were admitted in false labor and subsequently sent home

Most likely the labor ward register (possibly also operating theater register, admission or discharge register).

- Labor ward, admission and operating theater registers

PURPOSE AND ISSUES

Case fatality is a good indicator for hospital

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management. Several studies in Africa and Asia are showing that even though the incidence of admission from obstructed labor/ruptured uterus has not changed considerably over the last two decades, case fatality has decreased. This is a clear indication that management in hospital improved. However, women may also have come earlier, rather than moribund, when treatment could be more successful. Conversely, if an intervention in the hospital has taken place, women may now come from further away but still be in moribund condition and thus case fatality may not change or even increase.

Individual case audit of any obstetric calamity is recommended regardless of whether the patient survives or dies. Application of protocols cannot be isolated from availability of drugs and supplies which are necessary to treat the condition satisfactorily and availability of staff who have also the skills required for management of the condition.

Community-level delays need different interventions from delays in hospital. There is a notion that women will seek hospital care more when hospital practices and attitudes improve, but cultural and especially economic barriers play an important part in the use of services.

This indicator is used to assess change in the case fatality rate over time due to improvement of obstetric service.

Causality: If case fatality can be reduced, maternal morbidity and mortality will be re-

reduced from obstructed labor.

Feasibility: It can be routinely obtained, provided the relevant information on obstructed labor is recorded on admission in the labor ward register.

Responsiveness: Very responsive to manage-

ment/programmatic intervention to improve labor management inside the hospital. Could also be responsive to community intervention if we assume that women are referred earlier and are admitted in less critical condition.

Population- or facility-based: This indicator is facility-based.

Indicator

PROPORTION OF EXPECTED WOMEN WITH PROLONGED LABOR IN THE COMMUNITY GETTING TO THE HOSPITAL

DEFINITION

Prolonged labor can be defined as follows:

- In definite hard labor for > 12 hours (hard labor is when the woman has labor pains which prevent her from doing ordinary household work and make her want to lie down). This definition can be changed at country level.
- Labor which has progressed to or crossed the action line on the partograph.

The indicator is calculated as:

$$\frac{\text{number of admissions for prolonged labor}}{\text{expected number of prolonged labor in the community}} \times 100$$

To calculate the denominator: CBR x population in catchment area x 10%. If births are registered, then 10% of number of births in the catchment area.

The definition of the denominator is the expected number of women with prolonged labor in the community. An estimate of 10% of births in the population living in the catchment area of the hospital can be used in the absence of better data.

DATA REQUIREMENTS

- For numerator: number of admissions for prolonged labor in labor ward.
- For denominator: number of births, expected or actually registered.

This requires:

- mapping of district/catchment area and health facilities;
- population in district/catchment area; and
- crude birth rate in country (preferably rural/urban differential and relevant for that particular district).

DATA SOURCE(S)

- For numerator: admission register in labor ward.
- For denominator: birth registers, census or population surveys.

PURPOSE AND ISSUES

Unless community based data are available, the prevalence of prolonged labor in the community remains conjecture. Even then, community surveys depend on excellent interviewer training and supervision, and definitions of terms.

Whether this indicator of coverage is useful will depend on the obstetric service organization in the district. If there are no peripheral services and hospital practice improves, the number of cases admitted may increase. However, if the periphery is strengthened and labor is managed with a partograph in health centers, admission in the referral hospital

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may actually decrease (recent example from Ghana; Kusi Yeboah, personal communication). However, referrals may also decrease if hospital practice deteriorates.

If the intervention in the community was successful, one would hope that overall incidence of prolonged labor would decrease, making the denominator an overestimate.

This indicator assesses the proportion of women with prolonged/obstructed labor out of all expected women with prolonged/obstructed labor in the community reaching the hospital.

Causality: If more women with prolonged ear-

ly labor reach the hospital, morbidity and deaths from obstructed labor/ruptured uterus will decrease in the hospital and community.

Feasibility: Difficult to obtain because little is known about the incidence of prolonged/obstructed labor in the community.

Responsiveness: Responsive to programmatic intervention both at the community and hospital level. Women will come earlier to hospital if they recognize danger signs and that there will be a reduction in deaths and morbidity from prolonged/obstructed labor.

Population- or facility-based: Population-based.

Appendix B

MEMBERS OF THE SUBCOMMITTEE ON SAFE PREGNANCY

Safe Pregnancy

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Appendix C

STEERING COMMITTEE OF RHIWG

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